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THESIS

ENLISTMENT STANDARDS AS APPLIED TO THE
NAVY SELECTION PROCESS WITH REFERENCE
TO THE SIGNALMAN AND RADIOMAN RATINGS

by

Brenda M. Gagner

and

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June 1984

Thesis Advisor: William E. McGarvey

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Enlistment Standards As Applied to the Navy Selection Process With Reference to the Signalman and Radioman Ratings		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis June 1984
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Brenda M. Gagner and Patricia A. Chmiel		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93943		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93943		12. REPORT DATE June 1984
		13. NUMBER OF PAGES 122
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION, DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Enlistment Standards, Predictors, Criteria, Signalman, Radioman, Selection

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

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DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE
S/N 0102-LF-014-6601

Abstract cont. from Block 20

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Additionally, the study highlights the link with current selection procedures and characteristics and their possible effect on manpower modeling.

The cohort used in the study entered the Navy in 1976, 1977, and 1978. Results and recommendations for future research are also presented.

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Enlistment Standards As Applied to the Navy Selection Process With Reference to the Signalman And Radioman Ratings

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MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
June 1984

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The purpose of this thesis is to develop manpower selection models to improve the Navy's system of assigning personnel to the Signalman (SM) and Radioman (RM) ratings. Four multivariate models using "success" and "failure" as criterion variables were developed. The criterion was comprised of: months of total active federal military service (TAFMS1), achieved E-4 (ACHVDE4) and recommended for re-enlistment (ELIGREUP). Predictor variables were derived from personal biographical and aptitude data available at enlistment.

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I. INTRODUCTION

In 1976 it was estimated that ninety-one percent of military recruits would obtain training in their occupational subspecialties resulting in 80,000 man-years of trainees' time and cost about two billion dollars [Ref. 1]. Due to this high training cost, manpower planners in 1976 and now in 1984 have sought to identify "successful" personnel for technical schools by using personal entry characteristics. The Navy has specifically followed this manpower policy but although its method of selecting trainees has met training needs, it has not been successful in predicting actual military job performance [Ref. 2]. The desire to predict job performance has evolved due to the need to set enlistment standards at appropriate levels, the trend to apply "systems analysis" to all manpower levels in the form of modeling, the realization that potential bias can exist in selection tests, and the need to validate these tests with elements that reflect job behavior [Ref. 3]. If entry level characteristics can be linked to specific Navy ratings, then, theoretically, the individual will enjoy greater success during his military enlistment and the Navy will benefit in enhanced readiness by having personnel more accurately assigned to job ratings.

In keeping with the aforementioned theory, the purpose of this thesis is to look at data available on two communications ratings, Signalman (SM) and Radioman (RM), to develop and compare or contrast models which isolate predictors of job performance in these ratings. The models will be developed through the use of statistical regression and discriminant analysis on data collected both before and during the enlistment. The development of better selection

procedures for these ratings is of value to the Navy because both ratings have been subject to high attrition rates for the first term. According to a 1981 attrition severity index develcped in a Naval Postgraduate School thesis, SM's and RM's are ranked at 79 and 81, respectively, on a scale where 1 represents the least severe attrition rate and 85 the most severe. While attrition may result as much from events occurring after enlistment as from factors existing before enlistment, it is useful to control the latter if possible [Ref. 4]. The models developed by this analysis may reveal that additional personal variables exist which are statistically sound predictors of successful future performance; if so, the Navy might add this information to the body of knowledge it uses in determining selection procedures.

II. THE NAVY SELECTION PROCESS TODAY

A. PERSPECTIVES ON THE NAVY SELECTION PROCESS AND DATA ANALYSIS

In approaching the issue of enlistment standards for the selection of the Signalman and Radioman ratings, the authors realized that analysis of observations of members of the ratings could only be useful in the context of the process of selection itself. If one accepts that the purpose of the data analysis is to attempt to create models which may yield a better selection rate of successful individuals, then it is important to know not only how the models may fit into the selection process, but also what other factors are affecting selection today. The necessity to put the relationship between the selection process and data analysis into perspective resulted in a study of the selection literature to gain information on the selection process. It became quickly apparent that the information was not to be gleaned from the literature. Previous NPS theses, which will be summarized in Chapter IV, provided much detailed information on the execution of a data analysis of the nature intended but little background on how the results would really fit into the actual selection process. It was determined that an assessment of current selection processes, at the recruiter and classifier levels, should be done so that the authors and the reader could approach the data analysis from an enlightened viewpoint. To this end, the remainder of this chapter presents the selection process today and highlights the role of individuals as well as information in selection.

B. THE SELECTION PROCESS AT THE LOCAL LEVEL

Screening to see that individuals meet enlistment standards begins at the local level with an interview by the recruiter. An individual may be disqualified if the interview reveals that he has shortcomings in any of the following areas: character, health, age, law involvement, legal dependent limits, education level, narcotics involvement, guardian consent, or previous enlistment. Disqualifying shortcomings might include, for example, having been convicted of a felony or more than three misdemeanors, having used hard drugs, or having an unacceptable reenlistment code based on prior military service. It is sometimes possible to get a waiver for certain disqualifiers. This interview is known as a "blueprint."

If the "blueprint" shows that the individual is a potentially acceptable recruit, he is given a practice test consisting of samples of questions from each test in the ASVAB battery. Based on this sample, the recruiter computes a preliminary AFQT percentile score which is expected to correspond closely with what the person will score if he is allowed to take the official ASVAB. The AFQT is computed by adding the scores on selected portions of the ASVAB battery to determine a raw score which is converted to the AFQT percentile score.

This preliminary AFQT score is used with age and education information to determine a preliminary SCREEN score. SCREEN stands for "Success Chances for Recruits Entering the Navy" and projects the possibility of succeeding in the fleet during the first year of enlistment. Examination of the SCREEN Table I [Ref. 5] will help the reader understand the following example. A nineteen-year-old with an AFQT of 60 would score 88 SCREEN points if he had a high school diploma, 80 if he held a GED certificate, and 73 if he had no degree.

TABLE I

SUCCESS CHANCES FOR RECRUITS ENTERING THE NAVY

(SCREEN)

AFQT SCORE	AGE	EDUCATION LEVEL HIGH SCHOOL DIPLOMA GRADUATE*	 GED/CPT/ HOME STUDY COURSE*	 NEITHER	
95-100	17-19	93	85	77	
	20+	90	82	74	
67-94	17-19	91	83	76	
	20+	88	79	71	
38-66	17-19	88	80	73	
	20+	84	75	67	Minimum SCREEN Eligibility
19-37	17-19	83	75	68	
	20+	78	70	62	
17-18	17-19	75	68	62	
	20+	69	61	56	

*As defined in paragraph 1-I-7a.

All these are above the minimum SCREEN eligibility so the recruiter would consider this person a potential recruit. If this same person were to apply after he reached his twentieth birthday, then his scores on SCREEN would be 84, 75, and 67 respectively, assuming his AFQT had not changed. Since 67 is below minimum eligibility, if this person had no degree, he would not qualify for entrance into the Navy. The recruiter would have to decide whether to give him the official ASVAB (hoping he would do better than on the practice test and thus raise his AFQT), whether to suggest that he study for the ASVAB using one of the many commercial study guides available, or whether to tell the individual that he is not an acceptable applicant. It should be noted

here that the components of SCREEN scores currently in use are not the same as the components for the SCREEN scores found in the data base on which the analysis in this thesis has been conducted. Earlier SCREEN scores included marital status and numbers of dependents as predictors.

Persons with acceptable preliminary SCREEN scores are given the offical ASVAB test, versions 8,9, and 10 of which are currently administered. They consist of the following tests and range of scores:

GS- General Science: 22-67
AR- Arithmetic Reasoning: 28-67
WK- Word Knowledge: 20-62
PC- Paragraph Comprehension: 25-63
NO- Numerical Operations: 20-63
CS- Coding Speed: 24-75
AS- Auto and Shop Information: 24-65
MK- Math Knowledge: 32-71
MC- Mechanical Comprehension: 26-67
EI- Electronics Information: 26-67
VE- Combination WK and PC: 20-63

Answer sheets are scored at Military Entrance Processing Stations (MEPS) and scores for ASVAB tests WK,PC,AR, and NO are sent back to recruiters who then use the formula "WK + PC + AR +1/2 NO" to compute raw scores. The raw scores are translated into official AFQT percentiles and used to determine official SCREEN scores. The AFQT is also used to classify persons into mental groups as follows:

AFQT 93-100 = Category I
AFQT 65-92 = Category II
AFQT 49-64 = Category III-A
AFQT 31-48 = Category III-B
AFQT 24-30 = Category IV-A

No category IV-B or V individuals are currently being accepted into Navy active duty programs. Individuals who

officially meet entrance requirements are sent to the Navy Recruiting District Headquarters for processing and classifying. [Ref. 6]

C. THE SELECTION PROCESS WITHIN HIGH SCHOOLS

ASVAB Version 5 is administered in high schools to students who desire to take it. It is an older form of the ASVAB which is now administered only in high schools but which is still considered a valid predictor of Navy school performance despite misnorming problems associated with it. ASVAB 5 consists of the following tests and range of scores:

GI- General Information:20-66
NO- Numerical Operations:20-69
AD- Attention to Detail:20-80
WK- Word Knowledge:23-64
AR- Arithmetic Reasoning:23-65
SP- Space Perception:20-66
MK- Math Knowledge:26-67
EI- Electronics Information:20-68
MC- Mechanical Comprehension:25-71
GS- General Science:24-70
SI- Shop Information:20-65
AI- Automotive Information:26-67

Answer sheets for ASVAB 5 are also scored at MEPS and recruiters add the WK, AR, and SP scores to get a raw score which is converted to AFQT percent and used in determining an official SCREEN score. Individuals are notified that they can qualify for the military, and if they are interested, they are "blueprinted" as described earlier. High school students who meet enlistment standards are also processed and classified at the district level. ASVAB 5 is of interest primarily because the testing scores in the data base on which the analysis for this thesis was conducted were generated from ASVABs 5, 6 and 7 [Ref. 7].

D. THE SELECTION PROCESS AT THE DISTRICT LEVEL

Individuals who have been selected for enlistment into the Navy bring their application forms to the Navy Recruiting District offices. They are given complete physicals and participate in various processing activities. Finally, classifiers interview them and select them to enter a Navy rating.

The Navy classifier uses a job matrix which indicates specific requirements for each rating in the Navy. He also has the application form which each individual has filled out, part of which includes a statement regarding individual preferences. Also in his possession is the full battery of ASVAB scores which he uses to determine the ratings for which each individual can qualify.

Prior to the actual interview with the enlistee, the classifier studies this information. He checks to see whether or not the individual's scores qualify him for the job in which he has indicated an interest.

If the individual is willing to accept a six year active duty obligation, he may qualify for RM in the Advanced Technical Field and receive special training. Cutoff scores for this program are the same for all versions of the ASVAB: WK+NO+AD =149 and MK+EI+GS =156 +AR, TOTAL=218.

The classifier also uses his pre-interview assessment time to study a daily availability report which shows jobs which must be filled immediately and projects future requirements. It is his job to match the applicant's ability and preferences with the current needs of the Navy. Once he has assessed how the current requirements may match the particular applicant, he meets with the individual. If the individual is interested in leaving for boot camp immediately, he may be slated to fill one of the top priority slots on the daily availablility report. If the classifier

feels it is necessary, he fills out a computer card indicating the applicant's scores and certain memorandum notes and places it into a computer programmed to optimally match the Navy's needs with the individual. The program covers a three month period and indicates school openings and Navy needs for that timeframe. It may be programmed for further projections in three month increments. If the individual is interested in entering the Navy immediately, he must be slated into a current opening unless a later opening is tempting enough to make him delay his entry. If he desires to wait, he may be slated into one of the openings indicated by the computer. The classifier must be versatile enough to assess the applicant's potential value to the Navy and match it to all the factors affecting the situation. An individual's classification depends very much on how the classifier assesses the situation and on what he chooses to offer to the applicant. There is, therefore, an element of chance which may play a large part in the matching of persons to jobs. A person may want to become a Signalman, for example, but if there are no openings when he is classified, he will have to choose one of the available alternative ratings for which his total score of 104 qualifies him. He may thus find himself a Disbursing Clerk instead of a Signalman. It is the job of the classifier to match a person to what he, the classifier, thinks is a good available job and to convince the applicant that it will be a good job for him to accept. It is important to emphasize that the classifier is primarily concerned with meeting the needs of the Navy and that he must classify a large number of people daily; this process of matching applicants with jobs is thus often accomplished more quickly than the applicant might prefer.

Once an agreement has been reached between applicant and classifier, a contract is prepared which guarantees him the school that has been agreed upon. Currently, almost

everyone entering the Navy is slated for school rather than put into a general rating for on the job training. If a person fails the school, he is then reassigned to a general rating according to the needs of the Navy. [Ref. 8]

1. Signalman Rating

Since this thesis is focussed on the SM and RM ratings, the following cutoff information is of use:

Using ASVAB 5 a combination of WK and AR scores equalling 104 will qualify an individual for any of the following ratings: AK, AZ, CTC, DK, EA, IS, OS, PH, SK, SM.

Using ASVAB 8, 9, 10 a combination of VE and AR scores equalling 104 will qualify an individual for the same ratings.

2. Radioman Rating

Usings ASVAB 5 a combinatin of WK, NO, and AD equalling 149 will qualify a person for RM.

Using ASVAB 8, 9, 10 a combination of VE, NO, and CS equalling 149 will qualify a person for RM.

III. JOB ANALYSIS AND NAVY OPPORTUNITIES

Although the Signalman and Radioman ratings are both classified as Communications ratings, a study of job descriptions reveals that they have less in common than one might expect. The Signalman is involved in operating visual communications devices and deals primarily in ship to ship communications and in navigation. The Radioman is more diversified, dealing with electronic communications which may be of technical nature. It is not unexpected, then, to find that the Kroeker and Rafacz [Ref. 9]. complexity scale rates SM's at 50 and RM's at 80 where the median is 70 and scores range from 10 to 99, 99 being the most complex The sections which follow describe each rating in detail and explain the sea-shore rotation and advancement timetables currently being applied to each.

A. THE SIGNALMAN RATING

The Signalman rating has few civilian job equivalents, those of quartermaster, harbor policeman, and small boat operator. Persons entering the rating require no special technical or scientific skills, but are expected to have a capacity to learn, good memories, ability to think and speak clearly, and good vision and hearing. During the six week Class "A" Technical School, the Signalman learns about basic visual communiction tools and perfects them. The job consists of: sending and receiving formation maneuvering and tactical signals; sending and receiving flashing light, semaphore, and signal flag messages; standing visual communications watches; encoding and decoding messages; maintaining signal equipment; operating voice radio equipment;

rendering honors to visiting dignitaries and passing vessels and "dressing" the ship for special events [Ref. 10]. Individuals may enter the rating through on the job training as well as "A" school.

The Signalman is subject to a sea-shore rotation cycle of five years sea and two years shore. While ashore, Signalmen cannot utilize the skills of their rating so they must be versatile enough to perform as recruiters, instructors, company commanders, craftmasters, or security personnel. Because Signalmen can utilize their skills only at sea, the rating is not always open to women. There are presently about fifty female Signalmen out of a community of three thousand. Most of these are first-termers who are working aboard tenders which are among the few ships upon which women can serve.

Currently the Signalman is expected to advance to paygrade E-4 by the end of two years service and to E-5 by the end of three to three-and-one-half years service. Further advancement is more difficult and depends heavily on turnover within the rating. Detailers indicate that under present conditions Signalmen should advance to E-6 at between five and seven years service and to E-7 at between thirteen and fifteen years service. Signalmen currently are eligible for Selective Reenlistment Bonuses. [Ref. 11]

B. THE RADIOMAN RATING

The Radioman rating has numerous related civilian jobs including radio and radiotelephone operator, telegrapher-teletype-writer operator, radio dispatcher, Morse Code radio operator, radio message router, radio mechanic, and teletypewriter repairman. In addition to the learning and speaking skills required of the Signalman, the Radioman must have demonstrated aptitude for learning radio code and have

manual dexterity and an orientation towards tools, equipment and machines.

During the fourteen week Class "A" technical school, the Radioman learns basic skills such as communications equipment operations, typewriting, International Morse Code, radio-telephone and radio-teletype communicating, basic electricity, electronics and communications equipment circuitry, maintenance of communications equipment and testing communications equipment. The Radioman's job includes: transmitting, receiving, routing, and logging radio messages; observing applicable security regulations; advising on capabilities or condition of radio equipment; operating, repairing, and maintaining radio equipment; rigging emergency radio receiving and transmitting antennas; maintaining message center files; and operating and coordinating communications systems. [Ref. 12]

Sea-shore rotation for Radiomen varies depending on the sex and paygrade of the individual. Over the course of a career, males spend between thirty-six to forty-five months on each sea tour followed by between twenty-four and thirty-six months ashore. For E-4 and below, sea tours average forty-five months while shore tours average only twenty-four months. Limited numbers of females serve aboard tenders, but overseas duty at communications stations also qualifies as sea duty. Females serve an average of thirty-six months overseas followed by a shore tour in the continental United States. Shore tour time limits parallel those for men. Unlike Signalmen, Radiomen's shore duty does allow them to utilize specific rating skills; this is one reason why this rating is open to women.

Currently the Radioman is expected to advance to the rate E-4 within two years of service, to E-5 by the end of the first four year enlistment, to E-6 by year eight, to E-7 by year twelve, to E-8 by year eighteen, and to E-9 by year

twenty-two. Radiomen currently qualify for Selective Reenlistment Bonuses. [Ref. 13]

The Radioman rating has recently been included in the Advanced Technical Field. Individuals willing to accept a six year active duty obligation and who have the necessary ASVAB scores can qualify for this more technical curriculum. ASVAB requirements are: WK + NO + AD = 149; MK EI + GS = 156 + AR, Total= 218. The data in the data base on which this analysis was conducted predates the offering of this program. [Ref. 14]

IV. LITERATURE REVIEW

A. REVIEW OF DOCUMENTS EXCLUSIVE OF NPS THESES

In a study by Plag [Ref. 15] to identify personal characteristics predictive of military success, male enlistees at Naval training centers at Great Lakes and San Diego entering in May, 1960, and August, 1960, were followed during their first four-year enlistments. Effective individuals were those who completed the term of enlistment and were recommended for reenlistment; ineffective persons were those who separated early from the Navy and were not recommended for reenlistment. Those discharged due to medical reasons or who died during the period were screened from the data base. The existence of Naval Reserve enlistees, who are required to serve two years of military service resulted in a decline in numbers in the data base over the various stages of the study. Thus, final screens yielded 1776 enlistees in the validation sample. The study itself was divided into four stages: 1) pre-enlistment 2) second week of recruit training 3) final (ninth) week of recruit training 4) two years of active duty. Stage 1 utilized 14 predictor variables (personal characteristics and AFQT); stage 2 used stage 1 variables plus four Navy classification battery scores and a rating derived from a psychiatric screening exam; stage 3 used stage 2 variables plus four variables based on school performance; stage 4 used stage 3 variables plus four measures based on division officer ratings, disciplinary record or commendation record, paygrade at the end of two years and average semi-annual marks. Results demonstrated that 75.3 percent of validation samples in stages 1 and 2 were effective sailors. Stage 3

reflected a 77.5 percentage; stage 4, 86.1 percent. The cross-validation sample yielded similar results. Eight variables from the original 14 in stage 1 were deleted due to links to the criterion. All other predictor variables remained in the study. Product-moment correlations demonstrated that stage 3, final week of recruit training, did not differ greatly from effectiveness predictions in stage 1, pre-enlistment.

A study by Sands [Ref. 16] developed a PCET-2 (prediction of enlisted tenure - 2 years) model designed to be used by recruiters to estimate the survival probability for the first two years of military service. Predictors utilized were: aptitude test score, number of years of school completed, age at active duty base date and number of primary dependents. The data base consisted of all nonprior service enlisted males with an active duty base date in CY 1973. Completed data was compiled in June 1975 for a 2-year median length of service criterion. The original data base was then split into three groups: survivors, losses and indeterminates which resulted in a survival criterion of 72 percent and a loss of 28 percent of a 68,616 sample size. Results demonstrated that survival rate increases as education increases. Survival increased as mental group category increased except for the two lowest groups. This may be explained by the small proportion of group IV personnel (3 percent) compared to the large numbers in group III-lower (30 per cent). Other results showed that persons enlisting at age 18+ have a higher rate of survival than individuals enlisting at age 17 and those with no dependents were more likely to survive than individuals with one or more dependents.

In a study by Lockman [Ref. 17], SCREEN (Success Chances for Recruits Entering the Navy), a method of predicting the probability of first year completion of military service

based on education, mental group, age, race and dependent status, was validated by a new cohort of recruits. The initial study, which developed SCREEN, utilized 67,000 non-prior service males who entered the regular Navy in CY 1973. Lockman's validation applied the SCREEN prediction model to CY 1974 recruits and extended data analysis through two years of service for the original CY 1973 cohort. Findings showed that the probability of completion of the first year of service for high school graduates and upper mental groups were approximately the same for both CY groups; however, SCREEN chances for those with the least education and mental group were overestimated. For successful completion of two years of service, high school graduates enjoyed a higher success rate than non-graduates and GED high school equivalencies. Further, high school graduates of below average mental ability experienced higher SCREEN chances of success than non-graduates of above average mental ability for both Caucasian and non-Caucasian groups. Although those with GED high school equivalencies had a higher SCREEN rate than graduates, their success chances were higher than non-graduates. Results also showed that the attrition rate for non-graduates is twice that for graduates for both racial groupings.

Lockman summarized an extensive body of work that was conducted during the 1973-1974 timeframe in his *Improved Techniques for Enlisted Attrition Management* [Ref. 18]. The enlisted tracking study initially devised a new method of screening Navy applicants. Following an initial observation of results of the CY 1973 recruit cohort on SCREEN, and validation using the CY 1974 recruit cohort, the Navy formally adopted SCREEN in October, 1976. Even though the Navy had accepted SCREEN for use in its selection process, work continued to improve the SCREEN tables which resulted in a revision of the first year SCREEN table. Analysis was

also directed to the optimal SCREEN qualifying score to minimize screening errors. The qualifying score used by the Navy on the original SCREEN was 72; the qualifying score used by the Navy at the publication of Lockman's study was a first year SCREEN (revised) of less than 70. A cost-benefit analysis was performed on the feasibility of using no SCREEN and using SCREEN with a qualifying score of 70. Results showed that attrition costs could be reduced by about $3 million with no increase in recruiting costs. A revision of SCREEN was necessary to distinguish between educational and age levels. The Navy was losing too many men with less than 11 years of education and younger 17-year-olds. A review of the CY 1973 cohort reflected a five percent greater survival rate for men with 11 years of education over less educated men and older 17-year-olds had a ten percent survival rate in the first year than younger 17-year-olds. With the various levels of these variables identified, results showed that recruits with dependents had a lower success chance than under the original SCREEN. Education and mental group continued to be important variables, but age also emerged as an important variable. Revised SCREEN was placed into effect 1 October 1977. Further analysis in Lockman's study included development of two and three year SCREENs to compare to the one-year SCREEN. Initial variables included age, number of dependents, years of education, race and term of enlistment. For the three-year SCREEN, race did not improve the prediction when education was split into levels, and term of enlistment correlated so highly to education and mental group that it was not useful in predicting survival. Both race and term of enlistment were deleted. A comparison of one, two and three-year SCREENs demonstrated that prediction of survival was linked to the same background variables with few differences. Each SCREEN was applied to the CY 1973 cohort to determine percentages and

characteristics selected and rejected. The two- and three-year SCREENs were identical in results and either one when substituted for the one-year SCREEN would select the same number of applicants, but would screen out more 17-year-olds with lower survival rates after one year of service.

Validation of the Armed Services Vocational Battery (ASVAB), forms 6 and 7, was the focus of a study by Swanson [Ref. 19] in 1979. The ASVAB had been used for military service entry selection and and for selection of Naval personnel to schools since the introduction of ASVAB in 1976. The validation process had been begun but not on an extensive basis. Swanson sought to utilize a data base which represented a variety of Navy schools, to evaluate the composites for used for entry selection to these schools, and to develop more valid composites for schools if necessary. Criterion was either final school grades (FSG) for schools that used this measure and time in training (DAYS) for courses of self-paced instruction. Predictor variables were scores on 12 composite subtests of the ASVAB in addition to scores for 69 composites, obtained by summing scores of two or more subtests. For example, AFQT, which is used by all services to assess eligibility for enlistment, is obtained by adding scores on ASVAB Word Knowledge, Arithmetic Reasoning and Space Perception and converting this raw score to a percentile. 21 other composites are used by the services in personnel selection to service schools; the other 47 composites in the study were experimental. Conclusions of Swanson's study were that 1) FSG was a more predictable criterion than days, 2) ASVAB composite validities against an FSG criterion are close to those reported in earlier studies, 3) ASVAB composite validities against DAYS indicate some composites are much lower than they should be, and 4) numerous 2, 3, and 4 test sets of ASVAB composites with similar validities demonstrate

differences do not exist in validity among ASVAB tests. The study proposed changes in the selector composites for ten Navy schools, none of which included the Signalman (SM) or Radioman (RM) ratings. These recommended changes were accepted and placed in effect by the Navy.

A study by Lurie [Ref. 20] addressed inclusion of a measure of job performance as criterion to predict survivability of recruits rather than continue using first term of enlistment as criterion and current Navy enlistment standards as predictors. Thus, advancement and term of enlistment were criteria and AFQT score, age, primary dependents, and years of education were predictors for an analysis of two Navy ratings: Ship's Serviceman (SH) and Electronics Technician (ETN). The data base consisted of the CY 1973 recruit cohort of non- prior-service males which had been up-dated to the end of 1977. This study was not an attempt to determine the best measure of performance, as many criteria could be applied, but rather to offer a semi-Markov model to predict probabilities of advancement and survival. There were four different recruit combinations for each rating for which survival probabilities were determined. These groups for the SH rating were : high school graduate, AFQT = 20; high school graduate, AFQT = 50. ETNs were split similarly except AFQT scores were analyzed for 70 and 90. All recruits were single and 19 years old. Recruits were also broken down by paygrade (up to E-5) and term of enlistment (3, 4 or 6). For the Ship's Serviceman with a high school degree, a recruit's AFQT has a slight effect on advancement probabilities. For the same recruit with a term of enlistment of 1 year and an AFQT score of 50, he has a 4 percent better chance of becoming an E-3 than a recruit with an AFQT score of 20. This occurs also at advancement to E-4 after three years but there are no differences between the group combinations at advancement to

E-5. Even the detected differences can be explained by the higher attrition rates for individuals with lower AFQT scores. For non-high school graduates in the SH rating, recruits with lower AFQT scores fare better than non-graduates with higher scores. Attrition rates were the same for both AFQT = 20 and AFQT = 50 for non-graduates. Advancement occurs more quickly to E-3 and E-4 for those with lower scores. For example, a recruit has a 65 percent chance of attaining E-3 if he is a non-graduate and has an AFQT score of 20; if, however, he has an AFQT score of 50, his chances are only 54 percent of becoming an E-3. Also, high school non graduate recruits with higher scores have a greater chance of being reduced from E-2 to E-1, which may reflect dissatisfaction with being assigned to the Ship's Serviceman rating. This would indicate a need for enlistment standards (such as AFQT) to better place these individuals in more suitable ratings. There were no significant differences to report concerning the ETN rating. The author recommended that this analysis be extended to other ratings and that ASVAB test scores be utilized as predictors in qualification of recruits.

A recent study (1983) by Baker [Ref. 21] reported on the research and development efforts in the Navy Personnel Accessioning System (NPAS) project. Project funding ended in FY 1981 but the need for the concept still exists and Baker's study provides results of a needs assessment in areas covered by NPAS. The objectives of NPAS were to: "(1) serve as a data base management and labor-saving device for the Navy Recruiting Command, (2) assign recruits optimally to Navy jobs and reserve training school seats, (3) provide individualized career information with fewer support personnel, and (4) ensure improved person-job placement." The central problem addressed in this study was that present methods of accession do not adequately screen and assign

personnel, cause recruiters to have too much administrative work, and allow limited vocational counseling. The objective of the analysis was to determine the need for a Navy person-job matching (PJM) system. The analyst approached the problem by reviewing all available literature on selection, vocational guidance and assignment; interviewing Navy recruiting personnel; developing a structured interview and using it on Navy recruits at Great Lakes and Orlando; and developing a recruit experience questionnaire (REQ) and surveying recruits at Great Lakes and Orlando. Findings of the study were that recruits are screened by a series of tests: the Enlistment Screening Test (EST), the Nuclear Field Qualifying Test (NFQT), the Defense Agency Language Battery (DLAB), and the Armed Forces Qualification Test (AFQT) Composite derived from the Armed Services Vocation Aptitude Battery (ASVAB). EST is a test given to a prospect who has been interviewed by the recruiter and determined to be eligible to enlist (no police record). The EST consists of forms 5 and 6 and is administered to the individual unless he already has taken and obtained adequate scores on the ASVAB. About 85 percent of all prospective enlistees take the EST, which is used as a predictor for performance on the ASVAB. Also required for enlistment is a passing score on the AFQT. Although EST correlates highly with AFQT and predicts quite accurately whether a person will pass the AFQT, it does have some drawbacks. The most striking of these disadvantages is that EST was developed by the Air Force in 1976 to screen out all who scored below the 31st percentile. The Navy often accepts examinees who score at the 25th percentile. In 1976, EST detected 31-34 percent of individuals who failed the AFQT and erroneously rejected 4 to 6 percent. Additional findings were that vocational counseling is unsystematic or does not exist in Navy recruiting. Assignment is based on classification and

assignment within PRIDE (CLASP) which does not allow applicants to know job availability until they are totally within the enlistment stage. Conclusions of the study were: improved screening methods are needed to cut costs and increase effectiveness, vocational guidance is required at the recruiting commands for proper placement of prospects, assignment prediction would aid in job search, and a screening system based on vocational counseling could be designed and developed. The study recommended that a microcomputer-based system for personnel accessions be tested at a Navy Recruiting District. Some functions of the system would be: 1) an adaptive test to replace EST, 2) a computerized vocational guidance system, 3) an interest inventory designed for Navy applicants, 4) an assignment-prediction system, 5) a job-preview capability, 6) videodisc capabilities management support and word processing.

E. REVIEW OF NAVAL POSTGRADUATE SCHOOL THESES

Nesbitt's analysis of selection standards for Ship's Serviceman (SH), Personnelman (PN), and Aviation Technician (AT) ratings developed a "goodguy"-"badguy" approach. A global criterion of total length of service in months was applied to the data set. Secondary criteria split the data set into three groups. Category I were personnel who did not complete four years of service, who had been discharged for negative reasons and had bad records; Category II was comprised of those who did not complete four years of service, had demotions or were not recommended for reenlistment regardless of length of service; all others were placed in Category III. Predictor variables were: age at entry, marital status, highest educational level achieved, number of dependents, various ASVAB subtest scores, groupings based on AFQT scores, entry paygrade, and SCREEN score. Through

an extensive literature search and subsequent stepwise regression, discrimination analysis and cross-validation, Nesbitt provided a breakdown on race, sex, and job complexity. A job complexity study applies a scale to all rating from a least complex rating of 10 to a most complex rating of 99. Nesbitt's ratings appeared as:

SS = 40, EN = 67, AT = 95.

[Ref. 22]

Nesbitt's findings showed that entry age, education level and ASVAB tests were significant predictors of performance. Entry age was not a uniformly significant predictor but the relationship between age and criterion was always positive. Education level was also selected and tended to be positive in low complexity ratings and negative in higher complexity ratings. Nesbitt also found that whites in each rating performed better on ability tests than the other racial groups. Whites, however, also enter the military at a younger age and have the lowest educational level of all groups with the fewest married personnel in their ranks. He found that white women have performances very similar to men with the same predictor and criterion variables except that they have shorter length of service. [Ref. 22]

In a thesis by Bond on enlistment standards for the [Ref. 23] electronics technician (ET) rating, an ET cohort of 6390 enlistees was split into three groups for analysis. These groups were Nuclear Field ET (ETNF) both surface and subsurface, Advanced Electronic Field ET (Conventional Surface) (ETAEF), and other enlistees (ETOTH), which included ETs in Strategic Weapons Systems, Submariner (Navigation) and Submariner (Electronics Warfare). The initial criterion applied to each data base was time to E-4. Predictors were: WAIVER, months in delayed entry pool (MNTHSDEP), converted highest year of education (CHYEC), ENTRYAGE, entry paygrade

(ENTRPAYG), marital status (MRISTAT1), dependents (DEPEND), and all ASVAB subtests. Bond experienced difficulty with the criterion when applied to the NF cohort because ETNFs are automatically promoted to E-4 following formal training; thus, achieving E-5 would be a better criterion of success for the ETNF than months to E-4. Since data did not exist on number of days to E-5 or advancement to E-5, this strategy was dropped. Also, the author realized that advancing to E-5 without benefit of formal training after entering as an E-1 is not on a comparison level with making E-5. Therefore, criterion for the ETNF cohort was successful achievement of a nuclear qualified NEC code. Those who met this criterion were called Category 1 and termed successful in the SAS stepwise discriminant analysis procedure (PROC STEPDISC). Those who were dropped from the NF training pipeline comprised category 2 and those with negative military performance variables were included in Category 3.

Counter-intuitively, Category 1 did not have the best values of the three categories. In fact, in most of the ASVAB subtest values, Category 3 had higher values than Category 2. Following analysis of the categories, variables for the entire ET group were entered into a regression model to yield significant variables MRISTAT1, ENTRYAGE, WAIVER, MONTHSDEP, ENTRPAYG, ASVABAI, ASVABAD. Variables confirmed by the regression were then processed through the discriminant analysis procedure and resulted in a 59.85 percent hit rate for the calibration sample and a 58.1 percent hit rate for Categories 1 and 2. The inclusion of Category 3 in the model resulted in a 42.8 percent hit rate of personnel placed in Category 1, which represents a miss rate. Further analysis resulted in a change of the criterion to advancement to E-4 within one year. Results showed Category 1 to have more favorable means in all areas following the stepwise discriminant analysis procedure. Selected significant

variables were introduced into the regression procedure and into discriminant analysis. The final model selected for Category 2 was MNTHSDEP, DEPEND, ENTRYAGE, WAIVER, and ASVABAI. Final results were less acceptable for Category 1 prediction than the first discriminant analysis model, but this second model was better for Category 2 with hit rates of 67.36 percent and 32.64 percent. On the test sample, rates were 68.89 percent and 31.11 percent, respectively.

Data analysis of the AEFET cohort was approached in the same method as for the Nuclear Field ET. The criterion applied to this cohort was achievement of the Advanced Electronics Field NEC. Designated AEFETs were split into two groups: those who obtained their NEC (Category 1) and those who did not obtain an AEF NEC Category 2). Class means for all categories were obtained and a stepwise discriminant analysis performed on variables to yield DEPEND, ASVABEI, MNTHSDEP, ENTRYAGE and ASVABSI. Regression results showed DEPEND to be the most significant variable. Other significant variables were: ASVABEI, MNTHSDEP, ASVABNC, ENTRYAGE and ASVABSI. The discriminant procedure yielded a hit rate of 55.2 percent for Category 1 and a 60.14 hit rate for Category 2. Random test results were less for Category 1 and 63.38 percent for Category 2. ASVABSI was dropped since the SI test is no longer given, to result in slightly improved hit rates.

Group 3 analysis was conducted by separation of the cohort into four categories: (1) nuclear qualified, (2) conventional ETs, (3) participants in the E-4 advancement examination, and (4) those with negative performance traits. Class means were analyzed and and stepwise discriminant analysis performed to yield MRTSTAT1, MNTHSDEP, ASVABMK, ENTRYAGE and WAIVER as significant variables. The $\underline{R}^2$ was .0821, the highest of all regressions performed in the study. The hit rates were 62.29 percent and 61.36 percent

for Categories 1 and 2, respectively. The random sample showed a hit rate of 57.64 percent for category 1 and 61.11 percent for Category 2.

In all cases, the models developed by Bond are primarily best at predicting failure. Additionally, Bond's detailed report of his analysis reflects the difficulty in selecting the proper criterion in attempts to obtain significant results. This problem recurs throughout NPS theses done on enlistment standards.

A study by Snyder and Bergazzi on enlistment standards for Boiler Technicians (BT) and non-nuclear designated Machinists Mates (MM) split each rating population into sucessful BT and successful MM groups by using the criteria "time to advancement" and "recommended or not recommended for reenlistment." The authors conducted a series of criterion breakdowns to define "success", employed stepwise analysis to obtain predictor variables from twelve initial predictor variables for BT and MM, and utilized discriminant analysis and cross-validation to determine accuracy of results.

Snyder and Bergazzi found that defining "success" is time-consuming and difficult and requires further study for uniform Navy-wide application. Predictor variables for successful BT's were: highest year of education, ASVABWK, ASVABNO, entryage, ASVABMC, and ASVABMK. For successful MM's, predictor variables were: highest year of education, ASVABNO, ASVABWK, ASVABMK, ASVABMC, ASVABGI, and entry age. The analytical discriminant functions failed to yield improved accuracy over the method of selecting predictor variables employed by the Navy during the time when the data was collected. Snyder and Bergazzi concluded that highest year of eduction is important in predicting "success" of BT's and MM's; the higher the education level, the greater likelihood of "success". They recommended use of the entire

spectrum of ASVAB subtests rather than just shop or mathematical knowledge subtests used by Navy recruiters when the data was collected. [Ref. 24]

In a thesis by Wardlaw, the Operations Specialist (OS) rating was divided into three groups: successful, unsuccessful, and average performers. The criteria of "achieved paygrade E-4 or above in less than four years service" and "recommended for reenlistment" were applied to a data base of male recruits with "length of service less than or equal to six years" to yield the successful performance group, Category I. The unsuccessful performance group, Category II, used criteria of "failed to attain petty officer rank" and "not recommended for re-enlistment". All others fell into the average performance group. A random sampling was pulled from Categories I and II which became the data set for a stepwise regression. Sixteen variables were selected for Categories I and II, and of these, regression identified eight predictor variables (marital status, ASVABGI, ASVABMK, ASVABEI, ASVABMC, ASVABAR, ASVABWK, and converted years of highest education.) Discriminant analysis was performed and results demonstrated that Wardlaw's model improved selection of OS's by 6.3 percent in Category I and 17.8 percent in Category II. A discriminant analysis on Category III personnel showed that the numbers of Category III personnel were equally distributed between Categories I and II, signalling that other determining fators not present in the analysis are important in determining success or failure for this group. [Ref. 25]

In a study of enlistment standards for Aviation Structural Mechanics (AM), Whitmire and Deitchman split the AM population into two sets, one group who entered the Navy as AM's and the other group who converted to the AM rating. Two separate models were developed for each group. Whitmire and Deitchman next initiated their study with three criteria

measures and nineteen predictor variables for each data set. "Success" criteria were: completion of term of enlistment, achievement of paygrade E-4, and recommendation for re-enlistment. "Failure" criteria were: failure to achieve the "success" criteria. Predictor variables were: AFQT percentile, entry age, highest year of education, marital status, number of dependents, sex, term of enlistment, and eleven ASVAB subscores.

Results of the study show that six predictor variables were identified from the regressions for Model 1, the initial AM group. These variables were: term of enlistment, marital status, ASVABGS, converted highest year of education, ASVABNO, and ASVABAI. Predictor variables for converted AM's were: term of enlistment, converted highest year of education, AFQT percentile, ASVABMK, and marital status. Further results show that the subgroup of personnel who began their enlistment as AM's enjoyed a 9.43 percent improvement rate in successful selection of personnel than the model employed by the Navy at the time of the recruitment of the individuals for whom data was available in the data base. The group comprised of personnel who transferred to the AM rating did not show an improvement over the Navy's selection methods. The authors concluded that the predictor "term of enlistment" displayed intuitive results when correlated with six of the predictor variables chosen in the regression process; that is, there was a negative correlation. The more able individuals would enlist for a shorter period of time to re-enter the job market sooner with newly-acquired, saleable skills. It is not evident, however, that Whitmire and Deitchman excluded 3 X 6 / 4 X 6 reservists from their sample. Such a failure to exclude could exert a major impact on their findings. 3 x 6 refers to six years total service, three years active duty, three years reserve time. 4 x 6 refers to six years total

service, four years active duty, two years reserve duty. [Ref. 26]

Sandel and Gleason, in their work on Aviation Antisubmarine Warfare Operator (AW) and Aviation Antisubmarine Warfare Technician (AX) enlistment standards, developed a multivariate model using "success" and "failure" as criterion variables. Two subset data bases were developed for each rating; one data set developed predictor models and the second validated the model. Two separate models were created for each rating, each of which initially contained eighteen predictor variables and three criterion variables.

For the AX model, the stepwise regression identified four significant predictor variables: term of enlistment, SCREEN, ASVABNO, and ASVABGI. Sandel and Gleason deleted term of enlistment due to the fact that 187 of the 257 observations had initial enlistments for six years and were given automatic advancement to E-4 upon completion of Class "A" School. After deletion of term of enlistment, stepwise regression identified SCREEN, ASVABGI, entry paygrade and ASVABNO as four significant predictor variables. For the AW model, stepwise regression identified six predictor variables: term of enlistment, SCREEN, ASVABAR, ASVABSP, ASVABSI, and ASVABGS. Term of enlistment was again deleted and stepwise repeated to yield SCREEN, ASVABAR, ASVABMK, and entry paygrade as predictor variables. Also, it is not evident that Sandel and Gleason excluded so-called 3 x 6 / 4 x 6 reservists from their sample. Such a failure to exclude could exert a major impact on their findings. Subsequent discriminant analysis and cross-validation on each of the predictor sets withou term of enlistment among the predictor variables resulted in a 4% increase over the Navy's assignment process for the AX rating and a .5% increase for the AW rating. The authors recommend further

study in the areas of cost and utility of correct rejections and wrong rejections of personnel entering the AX and AW ratings. [Ref. 27]

Leverette, in a study of enlisted performance prediction models for Hull Technicians (HT), utilized the same procedures as Whitmire and Deitchman in an earlier study. Predictor variables for HT's who began their enlistment in this rating were: SCREEN, entry paygrade, AFQT percentile, ASVABNO, and ASVABMC. "Success" criteria were: completion of term of enlistment, achievement of paygrade E-4, and recommendation for re-enlistment. "Failure" criteria were failure to achieve the "success" criteria.

Results demonstrated that Leverette's model for predicting the success rate of HT's who are assigned to this rating at the beginning of their enlistment was 6.1% higher than the Navy's model. The results of the second model, those who converted to the HT rating, failed to significantly improve over the current success and failure rates experienced by the Navy. Leverette noted that 51.4% of the HT's in his study were not assigned to this rating at the beginning of their enlistment. He recommended a review of selection criteria. [Ref. 28]

V. DATA BASE PREPARATION AND ANALYTICAL PROCEDURES

The analysis described in this thesis was conducted using a data base located at Naval Postgraduate School. It contains enlistment and subsequent performance information on more than 200,000 individuals and was created by combining four data bases. These were: the Defense Manpower Data Center (DMDC) cohort file, the Navy Health Research Center (NHRC) file, the Chief of Naval Education and Training (CNET) file, and a promotion advancement examination file. The entries were merged by use of Social Security Number identification.

The initial step in performing the analysis was to run an existing program written in the Statistical Analysis System (SAS) code to extract nearly all the variables from the files, standardize ASVAB scores, and create new variables for use in the analysis. It also allowed the creation of two files, one for Signalmen and one for Radiomen, by screening all individuals who had either an appropriate final rating (DMDCRATE), advancement examination rating (EXAMRATE), and or entry rating (RCPGSCRT) code.

Next, to gain familiarity with the information contained in the files, relatively simple forms of analysis were conducted on each file on variables which were expected to be used in subsequent analysis. Frequency distributions were compiled for categorical variables such as sex, race, and Interservice Separation Code (ISC3). Univariate analyses were run on numerical variables such as Total Active Military Service (TAFMS1), Months in Delayed Entry Program (MNTHSDEP), and standardized ASVAB scores. For the numerical variables, means, standard deviations, and histograms were generated. These results were studied to gain

knowledge about missing values and extremes or outlying values, and to reveal possible trends for further investigations. Subsequently, they were used to create Table III which juxtaposes values for variables of interest for both ratings and which will be discussed later in this thesis.

The third step required selection of variables to be used in preliminary regressions and the application of screens to make their use as valid as possible. Therefore, concurrent with achieving data familiarity, a search of general recruitment and selection literature and of Naval Postgraduate School Theses on enlistment standards was initiated. These readings were summarized in Chapter IV. Table II provides a summary of the NPS theses which were carefully studied and frequently referred to in the course of preparing this document. The preliminary approach was to include in regression analyses combinations of the predictors which earlier theses had revealed to be significant. The theses also pointed out the importance of and difficulty in selecting appropriate criteria for success. Again, the selection of success criteria was based on the assessment of and thought generated by previous theses. Several combinations of success variables were tried before a final choice was made.

Previous theses and preliminary analysis were instrumental in pointing out the need to understand the variable coding to insure that only information which was reflective of valid facts would be included in the final files. For example, persons whose Interservice Separation Code showed that they had not completed their initial enlistment cannot be automatically classified as failures. Some of the codes are assigned for causes outside of individual control such as hardship discharge or for positive reasons such as transfer to a commissioning program. Individuals who fell into certain ISC categories had to be screened out of the

file in the interests of accuracy. Another example occurred in the creation of the SM file due to the requirements of the rating. Probably because SM's use their skills only at sea, only three of the individuals were female, an extremely small percentage of the total; they were excluded when it was decided that sex could not be a valuable variable for prediction. A third example concerns variables which provide duplicate information and which should match but which do not probably due to the complications of creating such a sizeable data base. Recruit Type Enlistment (RECENLST) and Term of Enlistment (TERMENLT) were two of these. Each had to be assessed to see which might be more reliable. It turned out that both revealed that a wide range of types of military obligation were accounted for in the data base. Therefore, RECENLST was selected and screened to include in the SM and RM files only individuals who had agreed to a four year active duty commitment and who had not had prior service experience.In this way, individuals whose records included prior service or performance in the reserves were deleted; this was done because of the many differences between services, active and reserve service, and requirements for promotion.

Frequency analysis also led to screening out of the two files any individuals whose membership status was questionable. As per Nesbitt, seven categories of cases were defined within the variable ENTRYGRP. They were as follows: (1) Those cases which signed up for a rating, took the advancement examination in that rating, and ultimately showed up in that rating in the DMDC active/loss files. (2) Those cases which signed up for a rating, took the advancement examination in that rating, and ultimately showed up in another rating in the DMDC active/loss files. (3) Those cases which signed up for a rating, migrated to other ratings for the advancement examination, but for the DMDC

file listings showed up in the original rating. (4) Those cases which signed up for a rating, but migrated to other ratings, both for the advancement exam, and ultimately in the DMDC active/loss files. (5) Those cases which did not sign up for a given rating, but took the advancement exam in that rating, and ultimately wound up in that rating in the DMDC active/loss files. Potentially, these represent general strikers, as well as 'fleet transmissions.' (6) Those cases which did not sign up for a given rating, but took the advancement exam in that rating, and ultimately migrated to an alternative rating in the DMDC active/loss files. (7) Those cases which did not sign up for a given rating, did not take the advancement exam in that rating, but ultimately showed up in that rating in the DMDC active/loss files. This showed that categories 1, 3, 5, and 7 included individuals who were truly representative of the rating. Categories 1 and 3 had originally been in the rating and stayed in it; categories 5 and 7 had migrated into it and remained in it. Categories 2, 4, and 6 had to be excluded because their status as rating members was in doubt. A list of all screens applied is included in Appendix C.

Although multiple regression can be a useful tool in itself, it is often advisable to do further analysis. With this in mind, at this point, the SM and RM screened files were each split into two parts, one to be used as a derivation sample and the other to be used as a validation sample. Multivariate and univariate analyses of variance were conducted on the derivation and validation groups to ensure that there were no statistically significant initial differences between them. This process constituted the fourth step in the analysis.

Once the SM and RM data files were created, screened, and split, they were further subdivided. In this, the fifth

step, two subgroups, white and non-white males, were created for the SM's and four were created for the RM's: white and non-white males and white and non-white females. Separate multiple regressions were run on each data set for the whole group and the subgroups. The predictors and criterion used for SM's and RM's were the same except that the dummy variable "male" was not used as a predictor for SM's. The dummy variables "black" and "other", which compared, respectively, blacks to whites, and other minorities to whites, were created for use in the full group analysis.

Formulating and assessing the results of preliminary multiple regressions was the sixth step. The purpose of regression analysis is to find the best linear equation to predict the criteria. The parameters in the equation can subsequently be used in future selection. In this analysis, various performance variables were combined to define the concept of success and several different concepts of success were used in preliminary regressions. Other data gathered at time of enlistment describing individual characteristics or capabilities were used as the predictors. These preliminary analyses used both block and stepwise regression. The "goodness of fit" of the model is judged by the size of the fractional coefficient of determination, $\underline{R}^2$, which measures the proportion of variation that is explained by the predictors which enter the model. The closer $\underline{R}^2$ is to one, the better the fit. [Ref. 29]

The block regression procedure calculates $\underline{R}^2$ for the model and lists each variable, showing the level of statistical significance ($\underline{F}$ statistic) that can be applied to its contribution to the model. Stepwise regression consists of a series of computations done in steps in which the variable with the highest $\underline{R}^2$ is selected for entry into the model. In step 2, it is combined with other variables until the variable with the next highest $\underline{R}^2$ is entered. To enter the

model, the variable must also meet the specified F statistic significance level. The process continues combining previously selected variables and entering a new one until no more can meet the entry requirements. During the process, it is also possible for a previously selected variable's discriminating powers to be affected by a newly created combination of variables; in this case, the variable may be excluded from the model. [Ref. 30]

Use of the .15 default significance level provided in SAS allows more variables enter the model so it is possible to gain a greater understanding of how all the variables contribute to the criterion. Unfortunately, that significance level is perhaps too high to be credible. For this reason, when regression results are selected for further use in analysis, only variables with less than a .05 F statistic are considered meaningful.

Both block and stepwise multiple regressions were run in this step of the data analysis. Initially, several different set of criteria were used to define the variable SUCCESS. These were the results of thought generated by previous theses and knowledge of today's selection system. Unfortunately, it was not always possible to put thought into action using some of the ideas created. Eventually, after consideration of several sets of criteria, this set was selected: a.) length of service greater than or equal to 45 months (TAFMS1); b.) achieved E-4 (ACHVDE4); and c.) eligible to reenlist (ELIGREUP). TAFMS1 for 45 months was used because it allowed the inclusion of people who had been coded as having completed enlistment despite the fact that they had not actually served four full years. The definition for the variable SUCCESS corresponded closely with that used in several earlier theses. Other possible definitions had yielded less encouraging results in the preliminary models.

Multiple regressions using SUCCESS as defined above were run using five combinations of predictors. Model A used the following: AFQT percentile, entry paygrade, entry age, dependent status, high school degree, the dummy variables "black" and "other" and all SASVABs. The RM analysis also included "male". All regressions were also run by group which necessitated the removal of the dummy variables "male", "black", and "other" from the models. Model B deleted variables that had been used as components of AFQT percentile (SASVABNO/WK/AR). Model C added SCREEN and put SASVABNO/WK/AR back in. Model D used SCREEN but deleted its components (AFQT percentile, entry age, and education status) from the original list of variables. Finally, Model E used only SASVABs as predictors. These combinations of predictor models resulted in numerous regressions on each of the three SM groups: main group, white, and non-white and on each of the five RM groups: main group, white male, white female, black male, and black female.

Analysis may terminate with regression analysis; alternately, the regressions may be used to help limit applications in discriminant analysis. Because the preliminary regression analysis proved more time-consuming and its results were less enlightening than had originally been anticipated, discriminant analysis applications, which make up steps seven through ten, were applied only to the more promising models.

The discriminant analysis technique computes a discriminant function by regression using separation of groups. To use it, a data file must be divided into two statistically equivialent files as described in step five. The purpose is to mathematically combine predictors to find those which can best be used to divide the observations into one of two categories. For this analysis, these were "Successes" and "Non-Successes." Using Model A predictors,

Step seven provided models containing significant variables and performed cross-validation between the DERIV8 and VALID8 samples, yielding a cross-validation coefficient which indicates the correlation between actual scores and predicted scores.

In step eight, Model A predictors were used in stepwise discriminant analysis. This also yielded models showing the optimal combination of significant variables which contribute the most to the discriminating power of the variable. Once the set of predictor variables was determined, they were used to classify cases in the validation set. [Ref. 31]

Step nine consisted of again performing cross-validation, this time using only the variables which had been selected for the step seven models. New cross-validation coefficients were produced.

The tenth and last step consisted of doing discriminant analysis on the significant variables resulting from both steps seven and eight, adjusting the prior probabilities of group membership and changing the way that the data was pooled for analysis. Each analysis yielded a matrix showing the number of individuals who had been classified into one of the following four categories:

a.) Actual Non-Success, Predicted Non-Success;
b.) Actual Success, Predicted Non-Success,
c.) Actual Non-Success, Predicted Success, and
d.) Actual Success, Predicted Success.

By adding the numbers in categories a and c, then dividing by the total number classified, it is possible to compute hit rates which tell the percentage of people correctly classified.

It is simple to get SAS to provide frequencies on the numbers of successful individuals in any data set. This percentage is compared to the hit rate that was generated in

step ten. If the hit rate is higher than the original success percentage, then the model created can improve upon the selection standard which was used to select the individuals documented in the data base. [Ref. 32]

The results of steps seven through ten are provided in tables located in the Appendix B; they will be discussed in the next chapter.

VI. RESULTS OF DATA ANALYSIS

A. COMPARISON OF SIGNALMAN AND RADIOMAN DESCRIPTIVE STATISTICS

Table III 'Predictors--Descriptive Statistics' provides an overview of SM and RM rating success performance. Eighteen predictors are listed; the variable sex was deleted because the SM rating did not have a significant number of women to merit separation into sex groupings. Therefore, only males comprised the SM data base as previously mentioned in this study. As SMs are predominantly assigned to sea duty, the absence of significant numbers of women is not surprising. In regard to comparisons between the Signalman rating and the Radioman rating, Radiomen, on the average: a) enter the military at an older age, and b) are the more educated of the two ratings. The older age at entry may be explained by the fact that the Radioman rating is higher on the complexity scale. Also those who entered may have held prior jobs that required technical skills which led these prospective recruits to choose the Radioman rating. Since RMs enter at a later age, they also have more time to acquire additional education. Further results demonstrated: c) RMs score higher on SASVABS AD, MK, and NO. Intuitively, one would expect RMs to score higher on the SASVABS because they are in a higher complexity rating, d) RMs score higher on the SCREEN variable and enter at a higher paygrade. The higher SCREEN score can again be attributed to the higher complexity rating. The higher paygrade may result due to the later age of recruits entering the rating; thus, entering with job skills and education to allow entry at a higher paygrade.

Generally, RMs scored lower in SASVABS AR, AI, EI, GI, MC, GI, MC, SI, and SP as well as the AFQT percentile. The lower scores of EI and AFQT of these eight categories are surprising in that a prospective RM might be expected to score higher in these areas due to the nature of the RM field and the technically-oriented individuals it attracts.

Table IV presents statistics on the criteria used in this study. Generally, RMs scored higher in all criterion categories of success: highest paygrade achieved, eligible for re-enlistment, and total months of active service. This is not unexpected considering the complexity rating of RMs vice SMs.

B. COMPARISON OF STEP SEVEN CROSS-VALIDATION RESULTS

For the Main Group, the SM and RM ratings had three significant variables in common. For SM's the variable entry paygrade entered the model to show that for SM's the higher the entry paygrade, the greater chance of success by the definition given. This makes sense because the individual entering at a higher paygrade has fewer hurdles to pass to reach E-4. Oddly, the results when this variable entered the RM model were counter-intuitive. For them, as entry paygrade increased, the likelihood of success decreased. The authors are at a loss to explain this result, particularly since a study of the means of entry paygrade for the variables showed that a greater number of RM's enter at higher paygrades than do SM's.

Another variable which entered for both ratings was HSDG, measuring educational level. Results were as expected for both ratings. That is, the greater the education level, the greater the chance of success. For both ratings, the dummy variable "black" was significant but the relationships were negative. Relative to whites, blacks were less likely to be successful.

The RM rating also entered two other significant variables. SASVABSI showed that the higher the individual's shop information score, the less likely he would be to be a successful RM. Also the dummy variable "male" was significant and showed that males were more likely to succeed. For the Main Group, cross-validation correlation coefficients for SM's and for RM's were quite close, .179 for SM's and .200 for RM's. Specific statistics for Step seven are located in Appendix B.

Looking at the analyses done by groups, it was found that the only group for either rating which showed significant variables was the White Male Group. For both SM's and RM's, the same results for entry paygrade occurred; that is, intuitive for SM's and counterintuitive for RM's. Again, for both groups the effect of HSDG was as expected. For SM's SASVABMC was significant in a negative way; the greater an SM's mechanical comprehension, the less likely he is to succeed as an SM. This may be due to the fact that his ability is useful at sea and he may change to a more demanding rating during his first enlistment if given the chance. The RM rating also yielded significant results for some SASVABs. For SASVABAI, the higher the auto information score, the greater the chance of RM success. For SASVABSI, the results are just the opposite; higher scores signify lower chances of success. For this group, the cross-validation correlation coefficents were not similar; that for RM's (.268) was nearly twice that for SM's (.138.) This indicates that the RM model for White Males pinpoints the relationship between actual and predicted scores much better than does the SM model for the group. Again, the specific statistics may be found in Appendix B.

C. COMPARISON OF STEP EIGHT STEPWISE DISCRIMINANT ANALYSIS RESULTS

Of the three variables which entered the Main Group Model for SM's and of the five which entered for RM's, only one, HSDG, was common to both. The amount of variation accounted for by the variable was higher, however, for SM's than for RM's, indicating that education has more effect on success potential for SM's than for RM's. Review of results for groups showed no common variables. The specific statistics may be found in Appendix B.

D. COMPARISON OF STEP NINE CROSS-VALIDATION RESULTS

Recognizing that the Step Nine cross-validation uses variables derived from the Step Seven cross-validation, it is noteworthy that comparison of cross-validation correlation coefficients remains very similar to that revealed in Step seven. That is, for the Main Group, the coefficients for SM and RM are close, and for the White Male group, the RM's coefficient is nearly twice that of the SM's.

E. COMPARISON OF STEP TEN DISCRIMINANT ANALYSIS RESULTS

Step ten consisted of determining hit rates for models developed in steps seven and eight. Hit rates were computed using combinations of proportional or default prior probabilities and pooling by use of within-group matrices or pooled covariance matrices. The resulting hit rates are reproduced in tables in Appendix B. It was decided that if the hit rate produced by use of the derivation sample (DERIV8) was within .025 of that produced by the validation sample (VALID8), then the hit rate would be considered valid. This choice was purely arbitrary as no information on accepable tolerance could be found.

Looking at the hit rates from the point of view of their validity and of how they can be used in comparison of the ratings, the ones resulting from step seven are worth discussing. For this set, many of the hit rates were in fact valid. After studying the results, it was found that the highest valid hit rates for both ratings came out of the combination of Priors Proportional and the linear discriminant function (which arises from the use of the POOL=YES option in PROC DISCRIM). For the Signalman Main Group, the prior probability of success was .36 and the hit rate for the model was .655, while for the Radioman Main Group, the prior probability was .34 and the hitrate was .661. In both cases, the model very strongly improved on ability to place individuals into the correct category; the improvement for SM's was .295 and for RM's .321. For the White Male Group, Signalmen and Radiomen both had prior probabilities of .38 and their respective hit rates became .648 and .625, showing improvements of .268 and .245 respectively. Of course, these figures depend on the belief that the prior probabilities accurately reflect reality.

It was harder to find valid hit rates developed using step eight stepwise discriminant analysis. For the Signalmen, in fact, only results for the Main Group were valid; using default priors and either method of pooling the results were a .548 hit rate. The corresponding result for Radiomen was .578. These are much less impressive than those reported earlier since they show an improvement over the priors of only .048 and .078. However, they result from the assumption that an individual has an even chance to succeed or not to succeed.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

Basing the conclusion of analysis on the hit rates for the models produced, it appears that the most useful models for the selection of potentially successful individuals for these ratings are the Main Group and White Male models developed in step seven. Summarizing the results for Signalman Main Group, the predictors of success are entry paygrade, education status, and the dummy variable "black". The hit rate is improved by .295 . For Radioman Main Group, the predictor variables are entry paygrade, education status, SASVABSI, and the dummy variables "black" and "male" with a hitrate improvement of .321. For the Signalman White Male Group, the predictors were entry paygrade, education status, and SASVABMC for a hit rate of .648, an improvement of .268. The Radioman White Male Group prdictors were entry paygrade, education status, SASVABAI and SASVABSI for a hit rate of .625, an improvement of .245. As can be seen, important predictor variables for both ratings and groupings include entry paygrade and education status.

It should be pointed out that entry paygrade is not a variable over which the individual has any control; a person receives the entry paygrade that the Navy gives him. The inclusion of education status as an important predictor is certainly not a surprising one since the link between it and success is common knowledge. As a result, it must be admitted that the lengthy analysis performed for this thesis has not revealed any new facts useful for selection of individuals for the ratings.

E. RECOMMENDATIONS

The following are recommended:

1.) The splitting of the data base into separate race/sex analytic groups results in excessively complicated analyses which do not seem to lead to beneficial conclusions; it is therefore advisable to avoid sub-group study unless there are weighty reasons for such action.

2.) As many others have recommended, the determination of criteria for success is a central issue in this type of study. From discussions with detailers for the ratings, it became clear, for example, that the use of achieving E-4 as a criterion for success was not particularly realistic since the expectation is that the average performer will reach E-5 by the end of his first enlistment. A similar observation was made by Bond in his thesis. Whether or not this fact should be applied to the data collected in the 1976-78 time-frame should be considered before further analysis of this nature is attempted.

3.) Regarding criteria, it also might be useful to determine whether the data base can be manipulated to reveal information on actual re-enlistment for use as a criteria of success. This suggestion is offered in light of the emphasis on alleviating the petty officer shortfall of the early 1980's.

4.) Since the data base used in this analysis is considered to be one of the more complete and well-organized available, it should be redocumented so that others will be able to use it with greater ease. This would be a very beneficial project for a student with appropriate interests and background.

5.) Lastly, the authors feel that the determination of predictors is an educational exercise in data analysis, but that it is only the beginning of an intelligent approach to

the problem of selection for Navy ratings. Field interviews conducted mid-way through the study pointed out that Navy needs, the attitudes of classifiers, and the constraints under which classifiers operate all strongly influence the use that can be made of any model developed through analysis. Further study of this relationship might prove of great benefit to Navy manpower planners.

APPENDIX A

TABLES

TABLE II

SUMMARY OF NAVAL POSTGRADUATE SCHOOL THESES

AUTHOR/ DATE	RATING(S) ANALYZED	ANALYTICAL METHODS	CRITERIA	SIGNIFICANT PREDICTORS
NESBITT Dec '82	SH PN AT	Descriptive analysis; Stepwise predictive regression;and Utility analysis.	Enlistment completed; Recommended for reenlistment;rated; made E-4 = Goodguy.	entryage highest year of education;raw ASVAB subtest scores; tests scores; AFQT% scores; groups based on AFQT;entry paygrade;and SCREEN score
BOND June '83	ET	Stepwise discriminant and validation by random sample.	Made E-4 in 1yr =Best.	Months in DEP; marital status; entryage; waiver; ASVABMK.
SNYDER and BERGAZZI June '83	ET MM	Breakdowns; Stepwise regression;and Discriminant analysis.	Time to E-4; rec.for reenlistment.	For BT:entry age;education; ASVABNC/MC/MK. For MM:entry age;education; ASVABNO/WK/MK/MC/GI.
WARDLAW June '83	CS	Stepwise reg. and Discriminant.	Made E-4 < 4 yrs and rec. for reenlsitment.	Education;marital status; ASVABGI/MK/EI/MC/AR/WK.
WHITMIRE and DEITCHMAN Sep '83	AMS AM AME	Frequencies; Stepwise reg. and Discriminant.	Completed 3.9 yrs of enlistment;made E-4; rec. for reenlistment.	Model 1: term of enlistment; marital status; education; ASVABGS/NC/AI.

TABLE II (cont.)
SUMMARY OF NAVAL POSTGRADUATE SCHOOL THESES

SANDEL and GLEASON Sep '83	AX AW	Multivariate correlation; Stepwise reg.; Discriminant analysis.	Completed 3.9 yrs of enlistment;made E-4; rec. for reenlistment.	For AX: SCREEN;entry paygrade;and ASVABGI/NC. For AW: SCREEN; ASVABAR/MK; entry pay grade.
LEVERETTE Sep '83	HT	Frequencies; Multivariate correlation; Stepwise reg. and Discriminant.	Completed 3.9 yrs of enlistment;made E-4; rec. for reenlistment.	Excluded race from model; SCREEN;AFQTR; SASVABSI;entry paygrade then entered new model.

TABLE III

PREDICTORS--DESCRIPTIVE STATISTICS

Predictor	Rating	N	Mean	Std Dev	Minimum	Maximum
Entry age	SM	986	18.7454	1.9089	17.000	29.000
	RM	4045	19.0883	2.0623	17.000	33.000
Dependts	SM	986	0.0335	0.1799	0.000	1.000
	RM	4045	0.0415	0.1995	0.000	1.000
High School Degreed	SM	986	.6389	.4806	0.000	1.000
	RM	4045	.8682	.3383	0.000	1.000
SASVAEAR	SM	986	52.4949	7.1618	23.000	65.000
	RM	4045	51.2220	6.8023	23.000	65.000
SASVAEAD	SM	986	50.2363	9.5158	20.000	80.000
	RM	4045	51.2801	9.6714	20.000	80.000
SASVAEAI	SM	986	48.2231	8.9747	26.000	67.000
	RM	4045	46.2561	9.0699	26.000	67.000
SASVAEEI	SM	986	49.7809	7.9675	20.000	68.000
	RM	4045	48.8079	8.0410	20.000	68.000
SASVAEGI	SM	986	51.8276	7.7618	20.000	66.000
	RM	4045	50.0302	7.8995	20.000	66.000
SASVAEGS	SM	986	50.8824	8.0910	24.000	70.000
	RM	4045	50.4465	7.7430	24.000	70.000
SASVAEMK	SM	986	51.1633	8.1185	26.000	67.000
	RM	4045	51.7533	7.7254	26.000	67.000
SASVAEMC	SM	986	49.9665	8.2414	25.000	71.000
	RM	4045	48.4326	8.3278	25.000	71.000
SASVAENO	SM	986	51.5456	8.4756	20.000	69.000
	RM	4045	52.5807	8.2411	20.000	69.000
SASVAESI	SM	986	49.4838	8.9624	20.000	65.000
	RM	4045	47.0925	9.2525	20.000	65.000
SASVAESP	SM	986	48.7312	8.7666	20.000	66.000
	RM	4045	47.6769	8.9366	20.000	66.000
SASVAEWK	SM	986	53.6095	7.2072	23.000	64.000
	RM	4045	52.8621	6.5374	23.000	64.000
AFQT %-ile	SM	986	56.9381	19.8205	0.000	99.000
	RM	4045	52.5412	19.6874	0.000	99.000
SCREEN Score	SM	986	81.8224	6.6009	59.000	95.000
	RM	4045	83.4918	6.0100	52.000	96.000
Entry Paygrade	SM	986	1.1846	0.5142	1.000	3.000
	RM	4045	1.4334	0.7619	1.000	3.000

TABLE IV

CRITERIA--DESCRIPTIVE STATISTICS

Criteria	Rating	N	Mean	Std Dev	Minimum	Maximum
Highest Paygrade Achieved	SM	986	3.9462	1.0702	1.000	5.000
	RM	4045	4.2621	0.8280	1.000	6.000
Eligible for Re-Enlistment	SM	986	0.3976	0.4896	0.000	1.000
	RM	4045	0.3983	0.4900	0.000	1.000
Total Months of Active Service	SM	986	45.5203	13.3548	4.000	71.000
	RM	4045	48.4749	11.5570	1.000	71.000

TABLE V

FREQUENCIES FOR SELECTED VARIABLES FOR SM RATING

ENTRY GROUP CLASSIFICATIONS

ENTRYGRP	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	140	140	14.199	14.199
3	45	185	4.564	18.763
5	571	756	57.911	76.673
7	230	986	23.327	100.000

EXPLANATION OF GROUPS CAN BE FOUND IN PROGRAM STEP1.

RACE	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	829	829	84.077	84.077
2	138	967	13.996	98.073
3	19	986	1.927	100.000

(1) WHITE, (2) BLACK, (3) OTHER

GROUP	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
1	829	829	84.077	84.077
2	157	986	15.923	100.000

(1) WHITE, (2) NON-WHITE

INTER-SERVICE SEPARATION CODE

ISC3	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	284	284	28.803	28.803
1	500	784	50.710	79.513
2	1	785	0.101	79.615
8	21	806	2.130	81.744
60	20	826	2.028	83.773
61	11	837	1.116	84.888
63	1	838	0.101	84.990
65	50	888	5.071	90.061
67	8	896	0.811	90.872
71	4	900	0.406	91.278
73	14	914	1.420	92.698
74	1	915	0.101	92.799
75	2	917	0.203	93.002
76	8	925	0.811	93.813
78	17	942	1.724	95.538
80	2	944	0.203	95.740
82	15	959	1.521	97.262
86	18	977	1.826	99.087
91	1	978	0.101	99.189
99	8	986	0.811	100.000

TABLE VI

FREQUENCIES FOR SELECTED VARIABLES FOR RM RATING

```
ENTRY GROUP CLASSIFICATIONS
ENTRYGRP   FREQUENCY  CUM FREQ   PERCENT  CUM PERCENT

       1       2083       2083    51.496       51.496
       3        900       2983    22.250       73.745
       5        788       3771    19.481       93.226
       7        274       4045     6.774      100.000

EXPLANATION OF GROUPS CAN BE FOUND IN PROGRAM STEP1.


RACE   FREQUENCY  CUM FREQ   PERCENT  CUM PERCENT

   0           2         2     0.049        0.049
   1        3040      3042    75.155       75.204
   2         920      3962    22.744       97.948
   3          83      4045     2.052      100.000

(1) WHITE, (2) BLACK, (3) OTHER


GROUP   FREQUENCY  CUM FREQ   PERCENT  CUM PERCENT

    1        2513      2513    62.126       62.126
    2         527      3040    13.028       75.155
    3         877      3917    21.681       96.836
    4         128      4045     3.164      100.000

(1) WHITE MALE, (2) WHITE FEMALE, (3) NON-WHITE MALE,
(4) NON-WHITE FEMALE
```

TABLE VI (cont.)
FREQUENCIES FOR SELECTED VARIABLES FOR RM RATING

INTER-SERVICE SEPARATION CODE

ISC3	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
0	1619	1619	40.025	40.025
1	1873	3492	46.304	86.329
2	5	3497	0.124	86.452
8	133	3630	3.288	89.740
60	82	3712	2.027	91.768
61	15	3727	0.371	92.138
63	1	3728	0.025	92.163
64	7	3735	0.173	92.336
65	68	3803	1.681	94.017
66	1	3804	0.025	94.042
67	26	3830	0.643	94.685
68	1	3831	0.025	94.710
71	11	3842	0.272	94.981
72	1	3843	0.025	95.006
73	21	3864	0.519	95.525
74	5	3869	0.124	95.649
75	1	3870	0.025	95.674
76	55	3925	1.360	97.033
77	1	3926	0.025	97.058
78	29	3955	0.717	97.775
80	5	3960	0.124	97.899
82	27	3987	0.667	98.566
86	30	4017	0.742	99.308
87	1	4018	0.025	99.333
91	1	4019	0.025	99.357
92	1	4020	0.025	99.382
95	1	4021	0.025	99.407
96	1	4022	0.025	99.431
98	2	4024	0.049	99.481
99	21	4045	0.519	100.000

APPENDIX B

RESULTS TABLES

TABLE VII

SIGNALMAN RESULTS OF CROSS-VALIDATION DONE IN STEP 7

MAIN GROUP Variables included: AFQTPCNT ENTRPAYG ENTRYAGE HSDG BLACK OTHER DEPENDTS SASVABAD-SASVABWK	MODEL: MAIN GROUP F-value Prob>F R-square 2.399 .0009 .0846 Variables entered and Prob>t ENTRPAYG .0185 HSDG .0003 BLACK .0121 Cross-Validation Correlation = .179
WHITE MALE GROUP Variables included: AFQTPCNT ENTRPAYG ENTRYAGE HSDG DEPENDTS SASVABAD-SASVABWK	MODEL: WHITE MALE F-value Prob>F R-square 2.699 .0003 .10 Variables entered and Prob>t ENTRPAYG .0195 HSDG .0001 SASVABMC .0479 Cross-Validation Correlation = .138
NON-WHITE MALE GROUP Variables included: AFQTPCNT ENTRPAYG ENTRYAGE HSDG DEPENDTS SASVABAD-SASVABWK	MODEL: NON-WHITE MALE F-value Prob>F R-square 1.074 .3967 .2167 No variables entered at less than the required .05 significance level. Cross-Validation Correlation = -.124

TABLE VIII

SIGNALMAN RESULTS OF STEPWISE DISCRIMINANT ANALYSIS DONE IN STEP 8

```
------------------------------------------------------------------------
MAIN GROUP            * MODEL: FROM STEPWISE SELECTION: STEP 4
Variables included:   *
AFQTPCNT              * Variable   Partial  F-Value   Prob>F
ENTRPAYG              *            R-sq
ENTRYAGE              * HSDG       .0420    20.558    .0001
HSDG                  * SASVABEI   .0115     5.445    .0200
BLACK                 * SASVABMK   .0149     7.072    .0081
OTHER                 *
DEPENDTS              *
SASVABAD-SASVABWK     *
------------------------------------------------------------------------
WHITE GROUP           * MODEL: FROM STEPWISE SELECTION: STEP 2
Variables included:   *
AFQTPCNT              * Variable   Partial  F-Value   Prob>F
ENTRPAYG              *            R-sq
ENTRYAGE              * HSDG       .0556    23.420    .0001
HSDG                  * SASVABEI   .0199    8.079     .0047
DEPENDTS              * SASVABMK    0100    3.994     .0463
SASVABAD-SASVABWK     *
------------------------------------------------------------------------
NON-WHITE GROUP       * MODEL: FROM STEPWISE SELECTION: STEP 3
Variables included:   *
AFQTPCNT              * Variable   Partial  F-Value   Prob>F
ENTRPAYG              *            R-sq
ENTRYAGE              * AFQTPCNT   .0605     4.512    .0372
HSDG                  * SASVABNO   .0779     5.910    .0176
DEPENDTS              *
SASVABAD-SASVABWK     *
```

TABLE IX

SIGNALMAN RESULTS OF CROSS-VALIDATION DONE IN STEP 9

```
----------------------------------------------------------------------
MAIN GROUP                  *     MODEL: MAIN GROUP
Variables included:         *
ENTRPAYG                    *     F-Value    Prob>F      R-square
HSDG                        *     11.124     .0001       .0615
BLACK                       *
HSDG                        *     Variables Entered and  Prob>t
                            *     ENTRPAYG                .0183
                            *     HSDG                    .0001
                            *     BLACK                   .0148
                            *
                            *     Cross-Validation
                            *     Correlation = .205
----------------------------------------------------------------------
WHITE MALE GROUP            *     MODEL: WHITE MALE
Variables included:         *
ENTRPAYG                    *     F-Value    Prob>F      R-square
HSDG                        *     11.538     .0001       .0753
SASVABMC                    *
                            *     Variables Entered and  PROB>t
                            *     ENTRPAYG                .0174
                            *     HSDG                    .0001
                            *     SASVABMC                .0215
                            *
                            *     Cross-Validation
                            *     Correlation = .146
```

TABLE X

SIGNALMAN HIT RATES FROM STEP 10: DISCRIMINANT ANALYSIS USING SIGNIFICANT VARIABLES FROM STEP 7

POOL=TEST PRIORS PROPORTIONAL MG Success = .36 MG Non-Success = .64 WM Success = .38 WM Non-Success = .62	HIT RATES		
	MAIN GROUP	.653	DERIV8
		.658	VALID8
	WHITE MALE	.636	DERIV8
		.628	VALID8
POOL=YES PRIORS PROPORTIONAL MG Success = .36 MG Non-Success = .64 WM Success = .38 WM Non-Success = .62	HIT RATES		
	MAIN GROUP	.655	DERIV8
		.664	VALID8
	WHITE MALE	.648	DERIV8
		.625	VALID8
POOL=TEST DEFAULT PRIORS Success = .5 Non-Success = .5	HIT RATES		
	MAIN GROUP	.594	DERIV8
		.594	VALID8
	WHITE MALE	.632	DERIV8
		.655	VALID8
POOL=YES DEFAULT PRIORS Success = .5 Non-Success = .5	HIT RATES		
	MAIN GROUP	.591	DERIV8
		.586	VALID8
	WHITE MALE	.592	DERIV8
		.563	VALID8

TABLE XI

SIGNALMAN HIT RATES FROM STEP 10: DISCRIMINANT ANALYSIS USING SIGNIFICANT VARIABLES FROM STEP 8

POOL=TEST	HIT RATES		
PRIORS PROPORTIONAL			
MG Success = .36	MAIN GROUP	.639	DERIV8
MG Non-Success = .63		.670	VALID8
WM Success = .38	WHITE MALE	.624	DERIV8
WM Non-Success = .62		.655	VALID8
NWM Success = .29	NON-WHITE	.714	DERIV8
NWM Non-Success = .71	MALE	.753	VALID8
POOL=YES	HIT RATES		
PRIORS PROPORTIONAL			
MG Success = .36	MAIN GROUP	.639	DERIV8
MG Non-Success = .63		.670	VALID8
WM Success = .38	WHITE MALE	.624	DERIV8
WM Non-Success = .62		.655	VALID8
NWM Success = .29	NON-WHITE	.714	DERIV8
NWM Non-Success = .71	MALE	.753	VALID8
POOL=TEST	HIT RATES		
DEFAULT PRIORS			
Success = .5	MAIN GROUP	.548	DERIV8
Non-Success = .5		.554	VALID8
	WHITE MALE	.503	DERIV8
		.575	VALID8
	NON-WHITE	.571	DERIV8
	MALE	.507	VALID8
POOL=YES	HIT RATES		
DEFAULT PRIORS			
Success = .5	MAIN GROUP	.548	DERIV8
Non-Success = .5		.554	VALID8
	WHITE MALE	.503	DERIV8
		.575	VALID8
	NON-WHITE	.571	DERIV8
	MALE	.507	VALID8

TABLE XII

RADICMAN RESULTS OF CROSS-VALIDATION DONE IN STEP 7

```
---------------------------------------------------------------------------
MAIN GROUP                  *    MODEL: MAIN GROUP
Variables included:         *
AFQTPCNT                    *    F-Value    Prob>F      R-square
ENTRPAYG                    *    6.108      .0001       .0557
ENTRYAGE                    *
HSDG                        *    Variables Entered and Prob>t
BLACK                       *    ENTRPAYG                .0001
OTHER                       *    HSDG                    .0012
DEPENDTS                    *    BLACK                   .0001
MALE                        *    SASVABSI                .0162
SASVABAD-SASVABWK           *    MALE                    .0001
                            *
                            *    Cross-Validation
                            *    Correlation = .200
---------------------------------------------------------------------------
WHITE MALE GROUP            *    MODEL: WHITE MALE
Variables included:         *
AFQTPCNT                    *    F-Value    Prob>F      R-square
ENTRPAYG                    *    4.851      .0001       .0595
HSDG                        *
DEPENDTS                    *    Variables Entered and Prob>t
SASVABAD-SASVABWK           *    ENTRPAYG                .0001
                            *    HSDG                    .0102
                            *    SASVABAI                .0372
                            *    SASVABSI                .0432

                            *    Cross-Validation
                            *    Correlation = .268
---------------------------------------------------------------------------
WHITE FEMALE GROUP          *    MODEL: WHITE FEMALE
Variables included:         *
AFQTPCNT                    *    F-Value    Prob>F      R-square
ENTRPAYG                    *    1.468      .1065       .0925
ENTRYAGE                    *
HSDG                        *    No variables entered at less
DEPENDTS                    *    than the required .05
SASVABAD-SASVABWK           *    significance level.

                            *    Cross-Validation
                            *    Correlation = .085
---------------------------------------------------------------------------
BLACK MALE GROUP            *    MODEL: BLACK MALE
Variables included:         *
AFQTPCNT                    *    F-Value    Prob>F      R-square
ENTRPAYG                    *    .9018      .5740       .0345
ENTRYAGE                    *
HSDG                        *    No variables entered at less
DEPENDTS                    *    than the required .05
SASVABAD-SASVABWK           *    significance level.

                            *    Cross-Validation
                            *    Correlation = .043
```

TABLE XIII

RADIOMAN RESULTS OF STEPWISE DISCRIMINANT ANALYSIS DONE IN STEP 8

```
-----------------------------------------------------------------------
MAIN GROUP            * MODEL: FROM STEPWISE SELECTION: STEP 6
Variables included:   *
AFQTPCNT              * Variable   Partial  F-Value   Prob>F
ENTRPAYG              *            R-sq
MALE                  * MALE       .0103    20.310    .0001
ENTRYAGE              * ENTRPAYG   .0164    32.518    .0001
HSDG                  * HSDG       .0058    11.446    .0007
BLACK                 * BLACK      .0125    24.620    .0001
OTHER                 * SASVABWK   .0103     9.084    .0001
DEPENDTS              *
SASVABAD-SASVABWK     *
-----------------------------------------------------------------------
WHITE MALE GROUP      * MODEL: FROM STEPWISE SELECTION: STEP 3
Variables included:   *
AFQTPCNT              * Variable   Partial  F-Value   Prob>F
ENTRPAYG              *            R-sq
ENTRYAGE              * AFQTPCNT   .0081     9.694    .0019
HSDG                  * ENTRPAYG   .0321    39.424    .0001
DEPENDTS              *
SASVABAD-SASVABWK     *
-----------------------------------------------------------------------
WHITE FEMALE GROUP    * MODEL: FROM STEPWISE SELECTION: STEP 2
Variables included:   *
AFQTPCNT              * Variable   Partial  F-Value   Prob>F
ENTRPAYG              *            R-sq
ENTRYAGE              * SASVABGS   .0230     6.161    .0137
HSDG                  *
DEPENDTS              *
SASVABAD-SASVABWK     *
-----------------------------------------------------------------------
BLACK MALE GROUP      * MODEL: FROM STEPWISE SELECTION: STEP 1
Variables included:   *
AFQTPCNT              * Variable   Partial  F-Value   Prob>F
ENTRPAYG              *            R-sq
ENTRYAGE              * No variables can be entered as no steps
HSDG                  * are possible.
DEPENDTS              *
SASVABAD-SASVABWK     *
-----------------------------------------------------------------------
BLACK FEMALE GROUP    * MODEL: FROM STEPWISE SELECTION: STEP 3
Variables included:   *
AFQTPCNT              * Variable   Partial  F-Value   Prob>F
ENTRPAYG              *            R-sq
ENTRYAGE              * SASVABGS   .0667     4.501    .0378
HSDG                  * SASVABAI   .0586     3.924    .0520
DEPENDTS              *
SASVABAD-SASVABWK     *
```

TABLE XIV

RADIOMAN RESULTS OF CROSS-VALIDATION DONE IN STEP 9

```
-------------------------------------------------------------
MAIN GROUP                 *    MODEL: MAIN GROUP
Variables included:        *
ENTRPAYG                   *    F-Value    Prob>F     R-square
HSDG                       *    21.486     .0001      .0490
BLACK                      *
SASVABSI                   *    Variables Entered and Prob>t
MALE                       *    MALE                   .0001
                           *    ENTRPAYG               .0001
                           *    HSDG                   .0005
                           *    BLACK                  .0001
                           *    SASVABSI               .0012
                           *
                           *    Cross-Validation
                           *    Correlation = .204
-------------------------------------------------------------
WHITE MALE GROUP           *    MODEL: WHITE MALE
Variables included:        *
ENTRPAYG                   *    F-Value    Prob>F     R-square
HSDG                       *    17.001     .0001      .0491
SASVABAI                   *
SASVABSI                   *
                           *    Variables Entered and PROB>t
                           *    ENTRPAYG               .0001
                           *    HSDG                   .0078
                           *    SASVABAI               .1639
                           *    SASVABSI               .0017
                           *
                           *    Cross-Validation
                           *    Correlation = .271
```

TABLE XV

RADIOMAN HIT RATES FROM STEP 10: DISCRIMINANT ANALYSIS USING SIGNIFICANT VARIABLES FROM STEP 7

POOL=TEST	HIT RATES		
PRIORS PROPORTIONAL			
MG Success = .34	MAIN GROUP	.613	DERIV8
MG Non-Success = .66		.631	VALID8
WM Success = .38	WHITE MALE	.573	DERIV8
WM Non-Success = .62		.596	VALID8
POOL=YES	HIT RATES		
PRIORS PROPORTIONAL			
MG Success = .34	MAIN GROUP	.661	DERIV8
MG Non-Success = .66		.657	VALID8
WM Success = .38	WHITE MALE	.625	DERIV8
WM Non-Success = .62		.617	VALID8
POOL=TEST	HIT RATES		
DEFAULT PRIORS			
Success = .5	MAIN GROUP	.567	DERIV8
Non-Success = .5		.561	VALID8
	WHITE MALE	.553	DERIV8
		.581	VALID8
POOL=YES	HIT RATES		
DEFAULT PRIORS			
Success = .5	MAIN GROUP	.577	DERIV8
Non-Success = .5		.591	VALID8
	WHITE MALE	.547	DERIV8
		.586	VALID8

TABLE XVI

RADIOMAN HIT RATES FROM STEP 10: DISCRIMINANT ANALYSIS USING SIGNIFICANT VARIABLES FROM STEP 8

```
---------------------------------------------------------------------------
POOL=TEST                     *    HIT RATES
PRIORS PROPORTIONAL           *
MG Success = .34              *    MAIN GROUP     .610    DERIV8
MG Non-Success = .66          *                   .632    VALID8
WM Success = .38              *    WHITE MALE     .590    DERIV8
WM Non-Success = .62          *                   .576    VALID8
WF Success = .21              *    WHITE          .791    DERIV8
WF Non-Success = .79          *    FEMALE         .716    VALID8
NWF Success = .15             *    NON-WHITE      .854    DERIV8
NWF Non-Success = .85         *    FEMALE         .879    VALID8
---------------------------------------------------------------------------
POOL=YES                      *    HIT RATES
PRIORS PROPORTIONAL           *
MG Success = .361             *    MAIN GROUP     .639    DERIV8
MG Non-Success = .634         *                   .670    VALID8
WM Success = .375             *    WHITE MALE     .624    DERIV8
WM Non-Success = .625         *                   .625    VALID8
WF Success = .286             *    WHITE          .714    DERIV8
WF Non-Success = .714         *    FEMALE         .753    VALID8
NWF Success = .15             *    NON-WHITE      .854    DERIV8
NWF Non-Success = .85         *    FEMALE         .879    VALID8


---------------------------------------------------------------------------
POOL=TEST                     *    HIT RATES
DEFAULT PRIORS                *
Success = .5                  *    MAIN GROUP     .569    DERIV8
Non-Success = .5              *                   .563    VALID8
                              *    WHITE MALE     .512    DERIV8
                              *                   .534    VALID8
                              *    WHITE          .517    DERIV8
                              *    FEMALE         .538    VALID8
                              *    NON-WHITE      .855    DERIV8
                              *    FEMALE         .879    VALID8
---------------------------------------------------------------------------
POOL=YES                      *    HIT RATES
DEFAULT PRIORS                *
Success = .5                  *    MAIN GROUP     .578    DERIV8
Non-Success = .5              *                   .587    VALID8
                              *    WHITE MALE     .521    DERIV8
                              *                   .549    VALID8
                              *    WHITE          .517    DERIV8
                              *    FEMALE         .538    VALID8
                              *    NON-WHITE      .630    DERIV8
                              *    FEMALE         .439    VALID8
```

TABLE XVII

SIGNALMAN REGRESSION AND CROSS-VALIDATION RESULTS

```
MODEL: SIGNALMAN MAIN GROUP
DEP VARIABLE: SUCCESS  MEETS ALL CRITERIA (1), OTHER (0)
                         SUM OF           MEAN
SOURCE      DF          SQUARES          SQUARE         F VALUE        PROB>F
MODEL       19        10.012010        0.526948           2.399        0.0009
ERROR      493          108.273        0.219620
C TOTAL    512          118.285
    ROOT MSE           0.468636        R-SQUARE          0.0846
    DEP MEAN           0.360624        ADJ R-SQ          0.0494
    C.V.               129.9515

                      PARAMETER        STANDARD     T FOR H0:
VARIABLE    DF         ESTIMATE           ERROR   PARAMETER=0    PROB > |T|

INTERCEP     1        -0.186627        0.666566        -0.280        0.7796
AFQTPCNT     1      -0.00272135      0.00494987        -0.550        0.5827
ENTRPAYG     1         0.100173        0.042403         2.362        0.0185
ENTRYAGE     1      0.001355067        0.012856         0.105        0.9161
HSDG         1         0.173678        0.047713         3.640        0.0003
BLACK        1        -0.163955        0.065098        -2.519        0.0121
OTHER        1         0.168485        0.163675         1.029        0.3038
SASVABAD     1      0.002246635     0.002423981         0.927        0.3545
SASVABAI     1      0.003402558     0.003265216         1.042        0.2979
SASVABAR     1      0.006280558     0.006582404         0.954        0.3405
SASVABEI     1 -0.000200152         0.00372007        -0.054        0.9571
SASVABGI     1      -0.00284512     0.003567538        -0.798        0.4255
SASVABGS     1      0.003192353     0.003681912         0.867        0.3863
SASVABMC     1     -0.006355534      0.00362944        -1.751        0.0806
SASVABMK     1      0.000483233     0.003783701         0.128        0.8984
SASVABNO     1      0.002074449     0.003203302         0.648        0.5175
SASVABSI     1     -0.001197713     0.003211402        -0.373        0.7095
SASVABSP     1 0.0008161576        0.005502294         0.148        0.8821
SASVABWK     1      0.001102661     0.008978338         0.123        0.9023
DEPENDTS     1         0.026193        0.132347         0.198        0.8432


 CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 /   N = 473
                                        SUCCESS  SUCCHAT1

SUCCESS                                 1.00000   0.17947
MEETS ALL CRITERIA (1), OTHER (0)        0.0000    0.0001
SUCCHAT1                                0.17947   1.00000
                                         0.0001    0.0000
```

TABLE XVIII

SIGNALMAN WHITE MALE REGRESSION AND CROSS-CORRELATION

```
MODEL: SIGNALMAN WHITE MALE GROUP
DEP VARIABLE: SUCCESS  MEETS ALL CRITERIA (1), OTHER (0)
                    SUM OF         MEAN
SOURCE       DF      SQUARES       SQUARE      F VALUE       PROB>F
MODEL        17    10.100853     0.594168        2.699       0.0003
ERROR       411    90.477235     0.220139
C TOTAL     428      100.578
    ROOT MSE        0.469190     R-SQUARE       0.1004
    DEP MEAN        0.375291     ADJ R-SQ       0.0632
    C.V.            125.0202

                  PARAMETER      STANDARD   T FOR H0:
VARIABLE   DF      ESTIMATE         ERROR  PARAMETER=0   PROB > |T|

INTERCEP    1   -0.00462477      0.682838       -0.007       0.9946
AFQTPCNT    1   -0.00290031    0.00515775       -0.562       0.5742
ENTRPAYG    1      0.108967      0.046462        2.345       0.0195
ENTRYAGE    1   -0.00506412      0.014064       -0.360       0.7190
HSDG        1      0.219999      0.052747        4.171       0.0001
SASVABAD    1   0.002899998     0.0026283        1.103       0.2705
SASVABAI    1    0.00200364   0.003530807        0.567       0.5707
SASVABAR    1   0.009477749   0.006987679        1.356       0.1757
SASVABEI    1 .00006555204   0.004165907        0.016       0.9875
SASVABGI    1   -0.00620108   0.004002128       -1.549       0.1220
SASVABGS    1   0.005245113   0.004106527        1.277       0.2022
SASVABMC    1   -0.00770044   0.003880088       -1.985       0.0479
SASVABMK    1 0.0001804146   0.004111793        0.044       0.9650
SASVABNO    1   0.001160832   0.003590118        0.323       0.7466
SASVABSI    1 -0.000939896   0.003586449       -0.262       0.7934
SASVABSP    1   0.001033889   0.005750241        0.180       0.8574
SASVABWK    1 .00006338902   0.009544565        0.007       0.9947
DEPENDTS    1     -0.030835      0.150858       -0.204       0.8381

 CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 /  N = 400
                                    SUCCESS SUCCHAT2

SUCCESS                             1.00000  0.13765
MEETS ALL CRITERIA (1), OTHER (0)    0.0000   0.0058
SUCCHAT2                            0.13765  1.00000
```

TABLE XIX

SIGNALMAN NON-WHITE MALE REGRESSION AND CROSS-CORRELATION

```
MODEL: SIGNALMAN NON-WHITE MALE GROUP
DEP VARIABLE: SUCCESS  MEETS ALL CRITERIA (1), OTHER (0)
                          SUM OF            MEAN
SOURCE      DF           SQUARES          SQUARE       F VALUE        PROB>F
MODEL       17          3.715153      0.218538           1.074        0.3967
ERROR       66         13.427704      0.203450
C TOTAL     83         17.142857
     ROOT MSE           0.451054      R-SQUARE          0.2167
     DEP MEAN           0.285714      ADJ R-SQ          0.0150
     C.V.                157.869

                       PARAMETER        STANDARD    T FOR H0:
VARIABLE    DF          ESTIMATE           ERROR  PARAMETER=0     PROB > |T|

INTERCEP     1         -5.397441        3.986674       -1.354         0.1804
AFQIPCNT     1         -0.023977        0.027068       -0.886         0.3789
ENTRPAYG     1          0.028154        0.110382        0.255         0.7995
ENTRYAGE     1          0.041771        0.033530        1.246         0.2173
HSDG         1          0.095350        0.123775        0.770         0.4438
SASVABAD     1  -0.000464907     0.006606168       -0.070         0.9441
SASVABAI     1          0.014769     0.009103311        1.622         0.1095
SASVABAR     1          0.024710        0.032101        0.770         0.4442
SASVABEI     1   -0.00837483     0.009418658       -0.889         0.3771
SASVABGI     1          0.014020     0.008260971        1.697         0.0944
SASVABGS     1    -0.0085071     0.009297163       -0.915         0.3635
SASVABMC     1          0.013165        0.011825        1.113         0.2696
SASVABMK     1   -0.00226818        0.010638       -0.213         0.8318
SASVABNO     1   0.004548364     0.007643238        0.595         0.5538
SASVABSI     1   0.002384812     0.007866687        0.303         0.7627
SASVABSP     1          0.028646        0.030042        0.954         0.3438
SASVABWK     1          0.040036        0.045159        0.887         0.3785
DEPENDTS     1          0.194490        0.300736        0.647         0.5201


 CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 /  N = 73
                                     SUCCESS SUCCHAT2

SUCCESS                              1.00000 -0.12447
MEETS ALL CRITERIA (1), OTHER (0)     0.0000   0.2941
SUCCHAT2                            -0.12447  1.00000
                                      0.2941   0.0000
```

TABLE XX

RADIOMAN REGRESSION AND CROSS-VALIDATION RESULTS

```
MODEL: RADIOMAN MAIN GROUP
DEP VARIABLE: SUCCESS  MEETS ALL CRITERIA (1), OTHER (0)
                       SUM OF            MEAN
SOURCE      DF        SQUARES          SQUARE          F VALUE         PROB>F
MODEL       20      26.157600        1.307880            6.108         0.0001
ERROR     2072        443.633        0.214109
C TOTAL   2092        469.791
   ROOT MSE          0.462719        R-SQUARE           0.0557
   DEP MEAN          0.340182        ADJ R-SQ           0.0466
       C.V.          136.0211

                    PARAMETER        STANDARD      T FOR H0:
VARIABLE    DF       ESTIMATE           ERROR    PARAMETER=0     PROB > |T|

INTERCEP     1       0.239342        0.751326          0.319         0.7501
AFQTPCNT     1    -0.00185429     0.005070723         -0.366         0.7146
ENTRPAYG     1      -0.070563        0.015431         -4.573         0.0001
ENTRYAGE     1   0.0009606669     0.005780638          0.166         0.8680
HSDG         1       0.100066        0.030872          3.241         0.0012
BLACK        1      -0.121577        0.028378         -4.284         0.0001
OTHER        1      -0.030371        0.070021         -0.434         0.6645
SASVABAD     1    -0.00127862      0.00115205         -1.110         0.2672
SASVABAI     1    0.002388202     0.001572628          1.519         0.1290
SASVABAR     1    -0.00271249     0.005946206         -0.456         0.6483
SASVABEI     1    -0.00146969     0.001810796         -0.812         0.4171
SASVABGI     1   0.0007706332     0.001682643          0.458         0.6470
SASVABGS     1   -0.000689471     0.001865307         -0.370         0.7117
SASVABMC     1    -0.00233155     0.001757155         -1.327         0.1847
SASVABMK     1    0.002999039     0.001712534          1.751         0.0801
SASVABNO     1    0.001436602     0.001461573          0.983         0.3258
SASVABSI     1    -0.00384945     0.001599299         -2.407         0.0162
SASVABSP     1    0.002876847     0.005388151          0.534         0.5935
SASVABWK     1    0.002411862     0.009165638          0.263         0.7925
DEPENDTS     1      -0.014232        0.054344         -0.262         0.7934
MALE         1       0.219074        0.034458          6.358         0.0001


CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 /  N = 1952
                                        SUCCESS  SUCCHAT1

SUCCESS                                 1.00000   0.19958
MEETS ALL CRITERIA (1), OTHER (0)        0.0000    0.0001
SUCCHAT1                                0.19958   1.00000
                                         0.0001    0.0000
```

TABLE XXI

RADIOMAN WHITE MALE REGRESSION AND CROSS-CORRELATION

```
MODEL: RADIOMAN WHITE MALES
DEP VARIABLE: SUCCESS  MEETS ALL CRITERIA (1), OTHER (0)
                         SUM OF             MEAN
SOURCE      DF          SQUARES           SQUARE        F VALUE        PROB>F
MODEL       17        18.553273         1.091369          4.851        0.0001
ERROR     1303          293.156         0.224985
C TOTAL   1320          311.709
   ROOT MSE            0.474326         R-SQUARE         0.0595
    DEP MEAN           0.381529         ADJ R-SQ          0.0473
    C.V.               124.3224

                      PARAMETER         STANDARD     T FOR H0:
VARIABLE    DF         ESTIMATE            ERROR   PARAMETER=0     PROB > |T|

INTERCEP     1         0.702401         0.850413          0.826        0.4090
AFQIPCNT     1       -0.0017778      0.005775525         -0.308        0.7583
ENTRPAYG     1        -0.085764         0.019419         -4.416        0.0001
ENTRYAGE     1      -0.00238384       0.00852656         -0.280        0.7798
HSDG         1         0.099696         0.038762          2.572        0.0102
SASVABAD     1      -0.00161104      0.001489571         -1.082        0.2797
SASVABAI     1      0.004152482      0.001990632          2.086        0.0372
SASVABAR     1      -0.00403741       0.00682835         -0.591        0.5544
SASVABEI     1      -0.00172362      0.002407912         -0.716        0.4742
SASVABGI     1     -0.000704883      0.002226937         -0.317        0.7517
SASVABGS     1      -0.00321761      0.002417311         -1.331        0.1834
SASVABMC     1      -0.00228107       0.00228643         -0.998        0.3186
SASVABMK     1      0.003502148       0.00225013          1.556        0.1199
SASVABNO     1      0.001405217      0.001905324          0.738        0.4609
SASVABSI     1      -0.00433219      0.002140391         -2.024        0.0432
SASVABSP     1      0.002443514      0.006165738          0.396        0.6919
SASVABWK     1      0.003862758         0.010431          0.370        0.7112
DEPENDTS     1      0.005158921         0.073069          0.071        0.9437


WHITE MALE DERIVATION, WHITE MALE VALIDATION

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 /   N = 1192
                                        SUCCESS SUCCHAT2

SUCCESS                                 1.00000  0.26753
MEETS ALL CRITERIA (1), OTHER (0)        0.0000   0.0001
SUCCHAT2                                0.26753  1.00000
                                         0.0001   0.0000
```

TABLE XXII

RADICMAN WHITE FEMALE REGRESSION AND CROSS-CORRELATION

```
MODEL: RADICMAN WHITE FEMALES
DEP VARIABLE: SUCCESS  MEETS ALL CRITERIA (1), OTHER (0)
                        SUM OF          MEAN
SOURCE      DF        SQUARES         SQUARE       F VALUE        PROB>F
MODEL       17       4.021771       0.236575         1.468        0.1065
ERROR      245      39.476327       0.161128
C TOTAL    262      43.498099
   ROOT MSE          0.401407     R-SQUARE        0.0925
    DEP MEAN         0.209125     ADJ R-SQ         0.0295
    C.V.           191.9457

                   PARAMETER       STANDARD    T FOR H0:
VARIABLE    DF      ESTIMATE          ERROR   PARAMETER=0    PROB > |T|

INTERCEP     1     -2.863893       2.893561        -0.990        0.3233
AFQTPCNT     1     -0.017190       0.019205        -0.895        0.3716
ENTRPAYG     1 -0.000830693       0.042800        -0.019        0.9845
ENTRYAGE     1  0.001399233       0.011967         0.117        0.9070
HSDG         1      0.085344       0.082756         1.031        0.3034
SASVABAD     1  -0.00372626    0.002843823        -1.310        0.1913
SASVABAI     1 0.000949C845     0.00492026         0.193        0.8472
SASVABAR     1      0.025663       0.022570         1.137        0.2566
SASVABEI     1  0.002476874    0.004922192         0.503        0.6153
SASVABGI     1  -0.00939975    0.004016736        -2.340        0.0201
SASVABGS     1  0.007347147      0.0048405         1.518        0.1303
SASVABMC     1  -0.00620303    0.004695612        -1.321        0.1877
SASVABMK     1   0.00680243    0.004184852         1.625        0.1053
SASVABNO     1 0.000156 4985    0.004115648         0.038        0.9697
SASVABSI     1 -0.000971808    0.004222642        -0.230        0.8182
SASVABSP     1      0.024148       0.020477         1.179        0.2394
SASVABWK     1      0.027560       0.035388         0.779        0.4368
DEPENDIS     1      0.072860       0.149501         0.487        0.6264


WHITE FMLE DERIVATION, WHITE FMLE VALIDATION

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 /  N = 264
                                   SUCCESS SUCCHAT2

SUCCESS                            1.00000  0.08474
MEETS ALL CRITERIA (1), OTHER (0)   0.0000   0.1698
SUCCHAT2                           0.08474  1.00000
                                    0.1698   0.0000
```

TABLE XXIII

RADIOMAN NON-WHITE MALE REGRESSION AND CROSS-CORRELATION

```
MODEL: RADIOMAN BLACK MALES
DEP VARIABLE: SUCCESS  MEETS ALL CRITERIA (1), OTHER (0)
                     SUM OF           MEAN
SOURCE     DF       SQUARES          SQUARE       F VALUE        PROB>F
MODEL      17      3.363522        0.197854         0.901        0.5740
ERROR     429     94.247217        0.219690
C TOTAL   446     97.610738
   ROOT MSE        0.468712        R-SQUARE        0.0345
    DEP MEAN       0.322148         ADJ R-SQ      -0.0038
     C.V.          145.4959

                  PARAMETER        STANDARD    T FOR H0:
VARIABLE   DF      ESTIMATE           ERROR  PARAMETER=0     PROB > |T|

INTERCEP    1     -1.207501        2.390859       -0.505         0.6138
AFQTPCNT    1   -0.00773587        0.015973       -0.484         0.6284
ENTRPAYG    1     -0.012812        0.037688       -0.340         0.7341
ENTRYAGE    1   0.007658054        0.011903        0.643         0.5203
HSDG        1      0.129898        0.073409        1.770         0.0775
SASVABAD    1 .00005555686      0.002642691        0.021         0.9832
SASVABAI    1   -0.00235076     0.003605929       -0.652         0.5148
SASVABAR    1   0.005092377        0.018283        0.279         0.7807
SASVABEI    1   -0.00232293     0.003712584       -0.626         0.5319
SASVABGI    1      0.010476     0.003656766        2.865         0.0044
SASVABGS    1   0.001956446     0.003997002        0.489         0.6248
SASVABMC    1   -0.00127383     0.003800913       -0.335         0.7377
SASVABMK    1 0.0004394202      0.003680468        0.119         0.9050
SASVABNO    1   0.001708869     0.003145546        0.543         0.5872
SASVABSI    1 -0.000825608      0.003202673       -0.258         0.7967
SASVABSP    1      0.010290        0.016793        0.613         0.5404
SASVABWK    1      0.010102        0.028762        0.351         0.7256
DEPENDTS    1     -0.047433        0.113092       -0.419         0.6751

BLACK MALE DERIVATION, BLACK MALE VALIDATION

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 /  N = 430
                                          SUCCESS  SUCCHAT2

SUCCESS                                   1.00000   0.04282
MEETS ALL CRITERIA (1), OTHER (0)          0.0000    0.3758
SUCCHAT2                                  0.04282   1.00000
                                           0.3758    0.0000
```

TABLE XXIV

RADIOMAN NON-WHITE FEMALE REGRESSION AND CROSS-CORRELATION

```
MODEL: RADIOMAN BLACK FEMALES
DEP VARIABLE: SUCCESS  MEETS ALL CRITERIA (1), OTHER (0)
                       SUM OF          MEAN
SOURCE     DF         SQUARES         SQUARE       F VALUE        PROB>F
MODEL      17        1.866469       0.109792         0.829        0.6531
ERROR      44        5.827080       0.132434
C TOTAL    61        7.693548
    ROOT MSE         0.363914     R-SQUARE         0.2426
     DEP MEAN        0.145161     ADJ R-SQ        -0.0500
     C.V.            250.6965

                   PARAMETER       STANDARD    T FOR H0:
VARIABLE   DF       ESTIMATE          ERROR  PARAMETER=0    PROB > |T|

INTERCEP    1      -5.639069       7.042655       -0.801        0.4276
AFQTPCNT    1      -0.031893       0.043893       -0.727        0.4713
ENTRPAYG    1      -0.078967       0.081187       -0.973        0.3360
ENTRYAGE    1      -0.025990       0.022630       -1.148        0.2570
HSDG        1       0.056104       0.201476        0.278        0.7820
SASVABAD    1    0.006711686    0.005947758        1.128        0.2652
SASVABAI    1       0.013349       0.014836        0.900        0.3732
SASVABAR    1       0.036751       0.055130        0.667        0.5085
SASVABEI    1     -0.0041457     0.00960199       -0.432        0.6680
SASVABGI    1    0.008259685       0.010326        0.800        0.4281
SASVABGS    1      -0.011043       0.012179       -0.907        0.3695
SASVABMC    1    0.004180227     0.00958893        0.436        0.6650
SASVABMK    1    -0.00753183    0.009586851       -0.786        0.4363
SASVABNO    1    -0.00219696     0.00704051       -0.312        0.7565
SASVABSI    1    -0.00569457       0.010498       -0.542        0.5902
SASVABSP    1       0.038862       0.048116        0.808        0.4236
SASVABWK    1       0.082195       0.083590        0.983        0.3308
DEPENDTS    1      -0.114890       0.243092       -0.473        0.6388


BLACK FMLE DERIVATION, BLACK FMLE VALIDATION

CORRELATION COEFFICIENTS / PROB > |R| UNDER H0:RHO=0 /  N = 66
                                       SUCCESS SUCCHAT2

SUCCESS                                1.00000 -0.07913
MEETS ALL CRITERIA (1), OTHER (0)       0.0000   0.5277
SUCCHAT2                              -0.07913  1.00000
                                        0.5277   0.0000
```

APPENDIX C

PROGRAMS

TABLE XXV

INITIALIZE DATA BASE - FREQUENCY PROGRAM

```
//STEP1 JOB (3115,0103),'GAGNER', SMC 2438',CLASS=K
//*MAIN ORG=NPGVM1.3115P
//  EXEC PGM=IEFBR14
//DD1 DD DISP=(OLD,DELETE),
//    DSN=MSS.S3115.RMDATA
//  EXEC PGM=IEFBR14
//DD2 DD DISP=(OLD,DELETE),
//    DSN=MSS.S3115.DATARM1
//  EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD  UNIT=3400-5,VOL=SER=NPS709,
//  DISP=OLD,DSN=ENLST.ALL.A7678
//FILEOUT DD UNIT=3330V,MSVGP=PUB4A,DISP=(NEW,CATLG,DELETE),
//       DSN=MSS.S3115.RMDATA,
//         DCB=(BLKSIZE=6400)
//SYSIN DD *
OPTIONS LS = 80 NOCENTER ERRORS = 0;
DATA FILEOUT.RMDATA;
```

TABLE XXV (cont)
INITIALIZE DATA BASE - FREQUENCY PROGRAM

```
*-----------------------------------------------------------------
|   THIS SECTION EXTRACTS NEARLY ALL THE VARIABLES                |
|   FROM THE DMDC MASTER FILE;                                    |
-----------------------------------------------------------------;

           INFILE FILEIN; INPUT
@  5  CENSUSRG PIB1.  @  6  CENSUSDS PIB1.  @  7  HOMEZIP  PIB3.
@ 10  HMESTATE PIB1.  @ 11  DATEDETY PIB1.  @ 12  DATEDETM PIB1.
@ 13  BIRTHYR  PIB1.  @ 14  BIRTHMTH PIB1.  @ 15  BIRTHDAY PIB1.
@ 16  ENTRYAGE PIB1.  @ 17  RECORDID PIB1.  @ 18  HYEC     PIB1.
@ 19  SEX      PIB1.  @ 20  RACE     PIB1.  @ 21  ETHNIC   PIB1.
@ 22  RACEETHN PIB1.  @ 23  MRTLDPND PIB1.  @ 24  TESTFORM PIB1.
@ 25  AFQTPCNT PIB1.  @ 26  AFQTGRPS PIB1.  @ 27  ASVABGI  PIB1.
@ 28  ASVABNO  PIB1.  @ 29  ASVABAD  PIB1.  @ 30  ASVABWK  PIB1.
@ 31  ASVABAR  PIB1.  @ 32  ASVABSP  PIB1.  @ 33  ASVABMK  PIB1.
@ 34  ASVABEI  PIB1.  @ 35  ASVABMC  PIB1.  @ 36  ASVABGS  PIB1.
@ 37  ASVABSI  PIB1.  @ 38  ASVABAI  PIB1.  @ 39  SERVACCS PIB1.
@ 40  PRIORSRV PIB1.  @ 41  PUL      PIB1.  @ 42  HES      PIB1.
@ 43  ASVABCM  PIB1.  @ 44  ASVABCA  PIB1.  @ 45  ASVABCE  PIB1.
@ 46  ASVABCC  PIB1.  @ 47  ENTRYSTA PIB1.  @ 48  HEIGHT   PIB1.
@ 49  WEIGHT   PIB1.  @ 50  SYSTOLBP PIB1.  @ 51  DIASTLBP PIB1.
@ 52  MEDFAIL1 PIB1.  @ 53  MEDFAIL2 PIB1.  @ 54  MEDFAIL3 PIB1.
@ 55  WAIVER   PIB1.  @ 56  WAIVERAL PIB1.  @ 57  EXAMSTAT PIB1.
@ 58  ENTRYYR  PIB1.  @ 61  TERMENLT PIB1.  @ 62  ENTRPAYG PIB1.
@ 59  ENTRYMTH PIB1.  @ 60  ENTRYDAY PIB1.
@ 63  HOMECNTY PIB2.  @ 65  PROGENLT PIB5.  @ 72  AFEESSTA PIB1.
@ 73  BONUSOPT PIB1.  @ 74  ENLSTOPT PIB1.  @ 75  YOUTHPRG PIB1.
@ 78  TAPEDATE PIB1.  @ 81  TRENLMOS   $5.  @ 86  TAFMS1   PIB2.
@ 88  DPCC1    PIB2.  @ 90  DDCC1    PIB2.  @ 92  HYEC1    PIB1.
@ 93  PAYGRDE1 PIB1.  @ 94  SERVICE1 PIB1.  @ 95  MRTSTAT1 PIB1.
@ 96  NDPNDNT1 PIB1.  @ 97  SPNSPD1  PIB3.  @100  ISC1     PIB1.
@101  SEPRT1YR PIB1.  @102  SEPRT1MT PIB1.  @103  SEPRT1DY PIB1.
@104  BASD1YR  PIB1.  @105  BASD1MTH PIB1.  @106  BASD1DAY PIB1.
@107  ETS1YEAR PIB1.  @108  ETS1MNTH PIB1.
@109  DOLE1YR  PIB1.  @110  DOLE1MTH PIB1.
@113  PEBD1YR  PIB1.  @114  PEBD1MTH PIB1.  @115  PEBD1DAY PIB1.
@111  CHARSRV1 PIB1.  @112  ELGREUP1 PIB1.
@116  FILEFLG1 PIB2.  @118  TAFMS2   PIB2.
@120  DPCC2    PIB2.  @122  DDCC2    PIB2.  @124  HYEC2    PIB1.
@125  PAYGRDE2 PIB1.  @126  SERVICE2 PIB1.  @127  MRTSTAT2 PIB1.
@128  NDPNDNT2 PIB1.  @129  SPNSPD2  PIB3.  @132  ISC2     PIB1.
@133  SEPRT2YR PIB1.  @134  SEPRT2MT PIB1.  @135  SEPRT2DY PIB1.
@136  BASD2YR  PIB1.  @137  BASD2MTH PIB1.  @138  BASD2DAY PIB1.
@139  ETS2YEAR PIB1.  @140  ETS2MNTH PIB1.
@141  DOLE2YR  PIB1.  @142  DOLE2MTH PIB1.
@145  PEBD2YR  PIB1.  @146  PEBD2MTH PIB1.  @147  PEBD2DAY PIB1.
@143  CHARSRV2 PIB1.  @144  ELGREUP2 PIB1.
@148  FILEFLG2 PIB2.  @150  TAFMS3   PIB1.
@151  TAFMS4   PIB1.  @152  DPCC3    PIB2.  @154  DDOC3    PIB2.
@156  HYEC3    PIB1.  @157  PAYGRDE3 PIB1.  @158  SERVICE3 PIB1.
@159  MRTSTAT3 PIB1.  @160  NDPNDNT3 PIB1.  @161  SPNSPD3  PIB3.
@165  SEPRT3YR PIB1.  @166  SEPRT3MT PIB1.  @167  SEPRT3DY PIB1.
@168  BASD3YR  PIB1.  @169  BASD3MTH PIB1.  @170  BASD3DAY PIB1.
@171  ETS3YEAR PIB1.  @172  ETS3MNTH PIB1.
@173  DOLE3YR  PIB1.  @174  DOLE3MTH PIB1.
@177  PEBD3YR  PIB1.  @178  PEBD3MTH PIB1.  @179  PEBD3DAY PIB1.
@164  ISC3     PIB1.
@175  CHARSRV3 PIB1.
@176  ELGREUP3 PIB1.  @180  FILEFIG3 PIB2.
@182  FILEMTCH PIB4.  @186  DOEYRDEP PIB1.  @187  DOEMTDEP PIB1.
@188  MNTHSDEP PIB1.  @189  SPFLGML  PIB1.
@190  DCPGYR   PIB1.  @191  DCPGMNTH PIB1.
@212  GCT         2.  @214  ARI         2.  @216  MECH        2.
@218  CLER        2.  @220  AFQTS       2.  @222  PNEC       $4.
```

```
@227 CIZNSHIP   $1.
@229 PRIDEPND   $1. @230 SECDEPND   $1. @231 BRCL       $2.
@233 GROUPIND   $1. @234 AUTHRATE   $4. @240 EDPGYR     $4.
@244 SCHLCODE   $1. @245 SCHLWVR    $1. @246 ASTAR      $1.
@247 ISSIND     $1. @250 PRESRATE   $4.
@254 NUMPG1     $1. @255 PRRTABRV   $3. @258 EXAMRATE   $4.
@262 NUMPG2     $1. @263 EXRTABRV   $3. @266 TOTLRAW     3.
@269 STDNAVY     2. @272 PRCODE     $2. @274 ALTPRCDE   $2.
@276 FINLMULT    5. @281 FNMLTCUT    5. @287 PRFFACTR    3.
@290 AWIFACTR    2. @292 CHNGRATE   $1.
@296 RATEIND    $1. @297 SPPRCIND   $1. @298 TYPENLST   $2.
@301 MODEST     $1. @302 NENLSTMT    1.
@303 EAOS   YYMMDD6. @309 TAS       $4. @313 OAS        $4.
@317 LOSCODE    $1. @318 LOSWVR     $1. @319 SIPG       $4.
@323 TIRWVR     $1. @324 TIR        $4.
@336 ADBD   YYMMDD6. @343 EDPG  YYMMDD6. @349 DTIS       3.
@352 RECFORES    1. @356 NCHANGES    3. @384 AGE         2.
@386 NHRCGCT     2. @388 NHRCAFQT    2. @390 MENTLGRP   $1.
@391 EDCERTIF   $1. @392 MOBLDSGN   $1. @394 HYNDPNDT    2.
@396 GRP4PROG   $2. @398 SSDUTY     $1. @399 REGRESRV   $1.
@400 HYPAYGRD   $1. @401 NOTRCMD    $1. @402 SSNCHNGE   $1.
@403 TOTPRCMO    2. @405 TOTLDEMO    1. @406 TOTLAWOL    1.
@407 TOTDESRT    1. @408 TOTMLTCN    1. @409 TOTCVLCN    1.
@412 LNGTHSRV   $4. @416 SCREEN      2. @418 ATTRITCD   $1.
@419 RECNTC     $1. @420 RECENLST   $2. @422 RECPROGM   $1.
@423 RECPRGSC   $2. @425 RCPGSCRT   $4. @435 ELSTHIST   $1.
@436 NDAYSE2     4. @440 NDAYSE3     4. @444 NDAYSE4     4.
@449 DMDCRATE   $3. @452 DMDCNEC    $4. @456 DMDCUIC    $6.
@462 CONVDATE YYMMDD6. @468 GRADDATE YYMMDD6. @474 TRANDATE
YYMMDD6.@480 EARNNEC $4. @484 TRAININD $1. @485 STACTION $1.;
LABEL
CENSUSRG=CENSUS REGION (10 CODES)
CENSUSDS=CENSUS DISTRICT (5 CODES)
HOMEZIP =HOME OF RECORD ZIP CODE
HMESTATE=HOME OF RECORD--STATE
DATEDETY=YEAR OF FINAL QUALIFYING DETERMINATION
DATEDETM=MONTH OF FINAL QUALIFYING DETERMINATION
BIRTHYR =YEAR OF BIRTH
BIRTHMTH=MONTH OF BIRTH
BIRTHDAY=DAY OF BIRTH
ENTRYAGE=AGE OF INDIVIDUAL AT TIME OF ENTRY
RECORDID=RECORD ID--EXAM SCORE, DEP, ACTIVE DUTY
HYEC     =HIGHEST YEAR OF EDUCATION
SEX      =(1) MALE, (2) FEMALE
RACE     =(1) WHITE, (2) BLACK, (3) OTHER
ETHNIC   =INDIVIDUAL''S REPORTED ETHNIC STATUS
RACEETHN=SIX RACE-ETHNIC COMBINATIONS
MRTLDPND=MARITAL STATUS/DEPENDENTS
TESTFORM=TEST FORM/ECFA,ASVAB,AFWST,AFQT,OSB...
AFQTPCNT=AFQT PERCENTILE (OR EQUIVALENT)
AFQTGRPS=AFQT GROUPS (5,4C,4B,4A,3B,3A,2,1)
ASVABGI =ASVAB APTITUDE AREA SCORE--SUBSCALE GI
ASVABNC =ASVAB APTITUDE AREA SCORE--SUBSCALE NO
ASVABAD =ASVAB APTITUDE AREA SCORE--SUBSCALE AD
ASVABWK =ASVAB APTITUDE AREA SCORE--SUBSCALE WK
ASVABAR =ASVAB APTITUDE AREA SCORE--SUBSCALE AR
ASVABSP =ASVAB APTITUDE AREA SCORE--SUBSCALE SP
ASVABMK =ASVAB APTITUDE AREA SCORE--SUBSCALE MK
ASVABEI =ASVAB APTITUDE AREA SCORE--SUBSCALE EI
ASVABMC =ASVAB APTITUDE AREA SCORE--SUBSCALE MC
ASVABGS =ASVAB APTITUDE AREA SCORE--SUBSCALE GS
ASVABSI =ASVAB APTITUDE AREA SCORE--SUBSCALE SI
ASVABAI =ASVAB APTITUDE AREA SCORE--SUBSCALE AI
SERVACCS=SERVICE OF ACCESSION (NAVY,2)
PRIORSRV=PRIOR SERVICE (NON-PRIOR SERVICE,1)
PUL      =GEN. HEALTH, UPPER & LOWER EXTREMITIES
HES      =HEARING, VISION, PSYCHIATRIC WELL-BEING
ASVABCM =ASVAB APTITUDE AREA SCORE--SUBSCALE CM
ASVABCA =ASVAB APTITUDE AREA SCORE--SUBSCALE CA
```

```
ASVABCE  =ASVAB APTITUDE AREA SCORE--SUBSCALE CE
ASVABCC  =ASVAB APTITUDE AREA SCORE--SUBSCALE CC
ENTRYSTA=ENTRY STATUS (1,DIRECT TO ACTIVE DUTY)
HEIGHT   =HEIGHT IN INCHES (FRACTIONS DROPPED)
WEIGHT   =WEIGHT IN POUNDS (FRACTIONS ROUNDED)
SYSTOLBP=BLOOD PRESSURE--SYSTOLIC
DIASTLBP=BLOOD PRESSURE--DIASTOLIC
MEDFAIL1=PRIMARY MEDICALLY DISQUALIFYING DEFECT
MEDFAIL2=SECONDARY MEDICALLY DISQUALIFYING DEFECT
MEDFAIL3=TERTIARY MEDICALLY DISQUALIFYING DEFECT
WAIVER   =PERMIT CODE FOR AN OTHERWISE INELIGIBLE
WAIVERAL=WAIVER APPROVAL LEVEL AND EXPLANATION
EXAMSTAT=EXAMINATION STATUS (1,FULLY QUALIFIED)
TERMENLT=TERM OF ENLISTMENT (NO. OF YEARS)
ENTRPAYG=ENTRY PAY GRADE (E00--O11)
HOMECNTY=HOME OF RECORD COUNTY--FIPS
PROGENLT=PROGRAM ENLISTED FOR--SERVICE UNIQUE
AFEESSTA=MILITARY ENTRANCE PROCESSING STATIONS
BONUSOPT=BONUS OPTION, COMBAT OR NON-COMBAT
ENLSTOPT=ENLISTMENT OPTION
YOUTHPRG=YOUTH & RESERVE TRAINING PROGRAMS
TAPEDATE=MONTH OF FILE ON WHICH RECORD SUBMITTED
TRENLMOS=OCCUP. SPECIAL./RATING CHOICE UPON ENTRY
TAFMS1   =MONTHS OF TOTL. ACTIVE FED. MILIT. SERV.
DPOC1    =D.O.D. PRIMARY OCCUPATION CODE
DDOC1    =D.O.D. DUTY OCCUPATION CODE
HYEC1    =HIGHEST YEAR OF EDUCATION
PAYGRDE1=PAY GRADE AS-OF-DATE-OF-FILE/SEPARATION
SERVICE1=SERVICE CODE (2, NAVY)
MRTSTAT1=MARITAL STATUS (1,OTHER, 2,MARRIED)
NDPNDNT1=NUMBER OF DEPENDENTS (1, NONE)
SPNSPD1  =SEPARATION PROGRAM DESIGNATOR
ISC1     =INTER-SERVICE SEPARATION CODE
SEPRT1YR=YEAR OF SEPARATION (2ND DMDC SECTION)
SEPRT1MT=MONTH OF SEPARATION (2ND DMDC SECTION)
SEPRT1DY=DAY OF SEPARATION (2ND DMDC SECTION)
BASD1YR  =YEAR OF ACTIVE DUTY BASE DATE
BASD1MTH=MONTH OF ACTIVE DUTY BASE DATE
BASD1DAY=DAY OF ACTIVE DUTY BASE DATE
ETS1YEAR=ESTIMATED YEAR OF FULFILLED ACTIVE DUTY
ETS1MNTH=ESTIMATED MONTH OF FULFILLED ACTIVE DUTY
CHARSRV1=CHARACTER OF SERVICE
ELGREUP1=REENLISTMENT ELIGIBILITY
PEBD1YR  =YEAR OF PAY ENTRY BASE DATE
PEBD1MTH=MONTH OF PAY ENTRY BASE DATE
PEBD1DAY=DAY OF PAY ENTRY BASE DATE
ENTRYYR  =YEAR OF ENTRY TO ACTIVE/D.E.P.
ENTRYMTH=MONTH OF ENTRY TO ACTIVE/D.E.P.
ENTRYDAY=DAY OF ENTRY TO ACTIVE/D.E.P.
SEPRT1YR=YEAR OF SEPARATION (2ND DMDC SECTION)
SEPRT1MT=MONTH OF SEPARATION (2ND DMDC SECTION)
SEPRT1DY=DAY OF SEPARATION (2ND DMDC SECTION)
BASD1YR  =YEAR OF ACTIVE DUTY BASE DATE
BASD1MTH=MONTH OF ACTIVE DUTY BASE DATE
BASD1DAY=DAY OF ACTIVE DUTY BASE DATE
ETS1YEAR=ESTIMATED YEAR OF FULFILLED ACTIVE DUTY
ETS1MNTH=ESTIMATED MONTH OF FULFILLED ACTIVE DUTY
PEBD1YR  =YEAR OF PAY ENTRY BASE DATE
PEBD1MTH=MONTH OF PAY ENTRY BASE DATE
PEBD1DAY=DAY OF PAY ENTRY BASE DATE
FILEFLG1=FILE FLAG NO. 1
PEBD2YR  =YEAR OF PAY ENTRY BASE DATE
PEBD2MTH=MONTH OF PAY ENTRY BASE DATE
PEBD2DAY=DAY OF PAY ENTRY BASE DATE
SEPRT2YR=YEAR OF SEPARATION (3RD DMDC SECTION)
SEPRT2MT=MONTH OF SEPARATION (3RD DMDC SECTION)
SEPRT2DY=DAY OF SEPARATION (3RD DMDC SECTION)
BASD2YR  =YEAR OF ACTIVE DUTY BASE DATE
BASD2MTH=MONTH OF ACTIVE DUTY BASE DATE
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BASD2DAY=DAY OF ACTIVE DUTY BASE DATE
ETS2YEAR=ESTIMATED YEAR OF FULFILLED ACTIVE DUTY
ETS2MNTH=ESTIMATED MONTH OF FULFILLED ACTIVE DUTY
PEBD2YR =YEAR OF PAY ENTRY BASE DATE
PEBD2MTH=MONTH OF PAY ENTRY BASE DATE
PEBD2DAY=DAY OF PAY ENTRY BASE DATE
TAFMS2  =MONTHS OF TOTL. ACTIVE FED. MILIT. SERV.
DPOC2   =D.O.D. PRIMARY OCCUPATION CODE
DDOC2   =D.O.D. DUTY OCCUPATION CODE
HYEC2   =HIGHEST YEAR OF EDUCATION
PAYGRDE2=PAY GRADE AS-OF-DATE-OF-FILE/SEPARATION
SERVICE2=SERVICE CODE (2, NAVY)
MRTSTAT2=MARITAL STATUS (1,OTHER, 2,MARRIED)
NDPNDNT2=NUMBER OF DEPENDENTS (1, NONE)
SPNSPD2 =SEPARATION PROGRAM DESIGNATOR
ISC2    =INTER-SERVICE SEPARATION CODE
CHARSRV2=CHARACTER OF SERVICE
ELGREUP2=REENLISTMENT ELIGIBILITY
FILEFLG2=FILE FLAG NO. 2
PEBD3YR =YEAR OF PAY ENTRY BASE DATE
PEBD3MTH=MONTH OF PAY ENTRY BASE DATE
PEBD3DAY=DAY OF PAY ENTRY BASE DATE
SEPRT3YR=YEAR OF SEPARATION (4TH DMDC SECTION)
SEPRT3MT=MONTH OF SEPARATION (4TH DMDC SECTION)
SEPRT3DY=DAY OF SEPARATION (4TH DMDC SECTION)
BASD3YR =YEAR OF ACTIVE DUTY BASE DATE
BASD3MTH=MONTH OF ACTIVE DUTY BASE DATE
BASD3DAY=DAY OF ACTIVE DUTY BASE DATE
ETS3YEAR=ESTIMATED YEAR OF FULFILLED ACTIVE DUTY
ETS3MNTH=ESTIMATED MONTH OF FULFILLED ACTIVE DUTY
PEBD3YR =YEAR OF PAY ENTRY BASE DATE
PEBD3MTH=MONTH OF PAY ENTRY BASE DATE
PEBD3DAY=DAY OF PAY ENTRY BASE DATE
TAFMS3  =MONTHS OF TOTL. ACTIVE FED. MILIT. SERV.
TAFMS4  =MONTHS OF TOTL. ACTIVE FED. MILIT. SERV.
DPOC3   =D.O.D. PRIMARY OCCUPATION CODE
DDOC3   =D.O.D. DUTY OCCUPATION CODE
HYEC3   =HIGHEST YEAR OF EDUCATION
PAYGRDE3=PAY GRADE AS-OF-DATE-OF-FILE/SEPARATION
SERVICE3=SERVICE CODE (2, NAVY)
MRTSTAT3=MARITAL STATUS (1,OTHER, 2,MARRIED)
NDPNDNT3=NUMBER OF DEPENDENTS (1, NONE)
SPNSPD3 =SEPARATION PROGRAM DESIGNATOR
ISC3    =INTER-SERVICE SEPARATION CODE
CHARSRV3=CHARACTER OF SERVICE
ELGREUP3=REENLISTMENT ELIGIBILITY
FILEFLG3=FILE FLAG NO. 2
FILEMTCH=4-BYTE BINARY FILE MATCH INDICATORS
DOEYRDEP=DOE YEAR INTO D.E.P.
DOEMTDEP=DOE MONTH INTO D.E.P.
MNTHSDEP=MONTHS IN D.E.P.
SPFLGML =SPANISH FLAG MASTER/LOSS
DCPGMNTH=MONTH OF DCPG
DCPGYR  =YEAR OF DCPG
GCT     =BASIC BATTERY GCT
ARI     =BASIC BATTERY ARI
MECH    =BASIC BATTERY MECH
CLER    =BASIC BATTERY CLER
PNEC    =NAVY ENLISTED JOB CODE
CTZNSHIP=CITIZENSHIP CODE
BRCL    =BRANCH/CLASS
GROUPIND=GROUP INDICATOR
AUTHRATE=AUTHORIZED RATE (ABBR.)
EDPGYR  =EFFECTIVE DATE OF PAY GRADE
SCHLCODE=SCHOOL CODE
SCHLWVR =SCHOOL WAIVER
PRESRATE=PRESENT RATE CODE
PRRTABBV=PRESENT RATE (ABBR.)
EXAMRATE=EXAMINATION RATE CODE
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EXRTABRV=EXAMINATION RATE (ABBR.)
TOTLRAW =TOTAL RAW SCORE
STDNAVY =STANDARDIZED NAVY SCORE
PRCODE  =PROCESS CODE
ALTPRCDE=ALTERNATE PROCESS CODE
FINLMULT=CANDIDATE''S FINAL MULTIPLE
FNMLTCUT=FINAL MULTIPLE CUT
PRFFACTR=PERFORMANCE FACTOR
AWIFACTR=AWI FACTOR
CHNGRATE=CHANGE OF RATE INDICATOR
NENLSTMT=NUMBER OF ENLISTMENTS
EAOS    =EXPIRATION OF ACTIVE OBLIGATED SERVICE
TAS     =TOTAL ACTIVE SERVICE
OAS     =OTHER ACTIVE SERVICE
SIPG    =SERVICE IN PAY GRADE
LOSCODE =LENGTH OF SERVICE
LOSWVR  =LENGTH OF SERVICE WAIVER
TIRWVR  =TIME IN RATE WAIVER
TIR     =TIME IN RATE
ADBD    =ACTIVE DUTY BASE DATE
EDPG    =EFFECTIVE DATE OF PAY GRADE
DTIS    =DRILL TIME IN SERVICE
NCHANGES=NUMBER OF CHANGES/ENTRIES IN NHRC FILE
AGE     =CANDIDATE''S CURRENT AGE
NHRCGCT =NHRC FILE''S GENRL. CLASSIFICATION TEST
NHRCAFQT=NHRC FILE''S ARMED FORCES QUALIFY. TEST
MENTLGRP=MENTAL GROUP CODE
EDCERTIF=EDUCATION CERTIFICATE
MOBLDSGN=MILITARY OBLIGATION DESIGNATOR
HYNDPNDT=HIGHEST NUMBER OF PRIMARY DEPENDENTS
GRP4PROG=GROUP IV (100K) PROGRAM CODE
SSDUTY  =SEA-SHORE DUTY INDICATOR
REGRESRV=REGULAR RESERVE INDICATOR
HYPAYGRD=HIGHEST PAY GRADE
NOTRCMD =NOT RECOMMENDED FOR RE-ENLISTMENT
SSNCHNGE=SOCIAL SECURITY/NAME CHANGE
TOTPRCMO=TOTAL PROMOTIONS
TOTLDEMO=TOTAL DEMOTIONS
TOTLAWOL=TOTAL UA/AWOL
TOTDESRT=TOTAL DESERTIONS
TOTMLTCN=TOTAL MILITARY CONFINEMENTS
TOTCVLCN=TOTAL CIVILIAN CONFINEMENTS
LNGTHSRV=LENGTH OF SERVICE
SCREEN  =SCREEN SCORE
ATTRITCD=ATTRITION INDICATOR
RECNTC  =RECRUIT NAVAL TRAINING COMMAND
RECENLST=RECRUIT TYPE ENLISTMENT
RECPROGM=RECRUIT PROGRAM AT ENLISTMENT
RECPRGSC=RECRUIT PROGRAM/SCHOOL
RCPGSCRT=RECRUIT PROGRAM/SCHOOL RATE
ELSTHIST=ENLISTED HISTORY STATUS
NDAYSE2 =COMPUTED NUMBER OF DAYS TO E-2 RATING
NDAYSE3 =COMPUTED NUMBER OF DAYS TO E-3 RATING
NDAYSE4 =COMPUTED NUMBER OF DAYS TO E-4 RATING
DOLE1YR =YEAR OF LATEST RE-ENLISTMENT
DOLE1MTH=MONTH OF LATEST RE-ENLISTMENT
DOLE2YR =YEAR OF LATEST RE-ENLISTMENT
DOLE2MTH=MONTH OF LATEST RE-ENLISTMENT
DOLE3YR =YEAR OF LATEST RE-ENLISTMENT
DOLE3MTH=MONTH OF LATEST RE-ENLISTMENT
DMDCRATE=FINAL RATING AS LISTED BY D.M.D.C.
DMDCNEC =FINAL N.E.C. AS LISTED BY D.M.D.C.
DMDCUIC =FINAL U.I.C. AS LISTED BY D.M.D.C.
CONVDATE=CONVENING DATE FOR NITRAS COURSE
GRADDATE=GRADUATION DATE FOR NITRAS COURSE
TRANDATE=TRANSACTION DATE FOR NITRAS RECORD
EARNNEC =DID CANDIDATE EARN AN NEC?
TRAININD=TRAINING INDICATOR
STACTION=STUDENT ACTION CODES (PASS, P, ETC.);
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*THIS SECTION STANDARDIZES THE ASVAB SCORES AND CREATES
 NEW VARIABLES FOR USE IN THE ANALYSIS;
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IF ((TESTFORM GE 35)AND(TESTFORM LE 37));
IF ASVABGI<=15;IF ASVABNO<=50; IF ASVABAD<=30; IF ASVABWK<=30;
IF ASVABAR<=20; IF ASVABSP<=20; IF ASVABMK<=20; IF ASVABEI<=30;
IF ASVABMC<=20; IF ASVABGS<=20; IF ASVABSI<=20; IF ASVABAI<=20;


IF ASVABGI=0 THEN SASVABGI=20;  IF ASVABMK=2 THEN SASVABMK=30;
IF ASVABGI=1 THEN SASVABGI=24;  IF ASVABMK=3 THEN SASVABMK=32;
IF ASVABGI=2 THEN SASVABGI=27;  IF ASVABMK=4 THEN SASVABMK=35;
IF ASVABGI=3 THEN SASVABGI=30;  IF ASVABMK=5 THEN SASVABMK=37;
IF ASVABGI=4 THEN SASVABGI=33;  IF ASVABMK=6 THEN SASVABMK=39;
IF ASVABGI=5 THEN SASVABGI=36;  IF ASVABMK=7 THEN SASVABMK=41;
IF ASVABGI=6 THEN SASVABGI=39;  IF ASVABMK=8 THEN SASVABMK=43;
IF ASVABGI=7 THEN SASVABGI=42;  IF ASVABMK=9 THEN SASVABMK=45;
IF ASVABGI=8 THEN SASVABGI=45;  IF ASVABMK=10 THEN SASVABMK=47;
IF ASVABGI=9 THEN SASVABGI=48;  IF ASVABMK=11 THEN SASVABMK=49;
IF ASVABGI=10 THEN SASVABGI=51; IF ASVABMK=12 THEN SASVABMK=51;
IF ASVABGI=11 THEN SASVABGI=54; IF ASVABMK=13 THEN SASVABMK=53;
IF ASVABGI=12 THEN SASVABGI=57; IF ASVABMK=14 THEN SASVABMK=55;
IF ASVABGI=13 THEN SASVABGI=60; IF ASVABMK=15 THEN SASVABMK=57;
IF ASVABGI=14 THEN SASVABGI=63; IF ASVABMK=16 THEN SASVABMK=59;
IF ASVABGI=15 THEN SASVABGI=66; IF ASVABMK=17 THEN SASVABMK=61;
IF ASVABAR=0 THEN SASVABAR=23;  IF ASVABMK=18 THEN SASVABMK=63;
IF ASVABAR=1 THEN SASVABAR=25;  IF ASVABMK=19 THEN SASVABMK=65;
IF ASVABAR=2 THEN SASVABAR=27;  IF ASVABMK=20 THEN SASVABMK=67;
IF ASVABAR=3 THEN SASVABAR=29;  IF ASVABMC=0 THEN SASVABMC=25;
IF ASVABAR=4 THEN SASVABAR=32;  IF ASVABMC=1 THEN SASVABMC=27;
IF ASVABAR=5 THEN SASVABAR=34;  IF ASVABMC=2 THEN SASVABMC=30;
IF ASVABAR=6 THEN SASVABAR=36;  IF ASVABMC=3 THEN SASVABMC=32;
IF ASVABAR=7 THEN SASVABAR=38;  IF ASVABMC=4 THEN SASVABMC=34;
IF ASVABAR=8 THEN SASVABAR=40;  IF ASVABMC=5 THEN SASVABMC=37;
IF ASVABAR=9 THEN SASVABAR=42;  IF ASVABMC=6 THEN SASVABMC=39;
IF ASVABAR=10 THEN SASVABAR=44; IF ASVABMC=7 THEN SASVABMC=41;
IF ASVABAR=11 THEN SASVABAR=46; IF ASVABMC=8 THEN SASVABMC=43;
IF ASVABAR=12 THEN SASVABAR=48; IF ASVABMC=9 THEN SASVABMC=46;
IF ASVABAR=13 THEN SASVABAR=51; IF ASVABMC=10 THEN SASVABMC=48;
IF ASVABAR=14 THEN SASVABAR=53; IF ASVABMC=11 THEN SASVABMC=50;
IF ASVABAR=15 THEN SASVABAR=55; IF ASVABMC=12 THEN SASVABMC=53;
IF ASVABAR=16 THEN SASVABAR=57; IF ASVABMC=13 THEN SASVABMC=55;
IF ASVABAR=17 THEN SASVABAR=59; IF ASVABMC=14 THEN SASVABMC=57;
IF ASVABAR=18 THEN SASVABAR=61; IF ASVABMC=15 THEN SASVABMC=60;
IF ASVABAR=19 THEN SASVABAR=63; IF ASVABMC=16 THEN SASVABMC=62;
IF ASVABAR=20 THEN SASVABAR=65; IF ASVABMC=17 THEN SASVABMC=64;
IF ASVABSP=0 THEN SASVABSP=20;  IF ASVABMC=18 THEN SASVABMC=66;
IF ASVABSP=1 THEN SASVABSP=21;  IF ASVABMC=19 THEN SASVABMC=69;
IF ASVABSP=2 THEN SASVABSP=24;  IF ASVABMC=20 THEN SASVABMC=71;
IF ASVABSP=3 THEN SASVABSP=26;  IF ASVABGS=0 THEN SASVABGS=24;
IF ASVABSP=4 THEN SASVABSP=28;  IF ASVABGS=1 THEN SASVABGS=26;
IF ASVABSP=5 THEN SASVABSP=31;  IF ASVABGS=2 THEN SASVABGS=29;
IF ASVABSP=6 THEN SASVABSP=33;  IF ASVABGS=3 THEN SASVABGS=31;
IF ASVABSP=7 THEN SASVABSP=35;  IF ASVABGS=4 THEN SASVABGS=33;
IF ASVABSP=8 THEN SASVABSP=38;  IF ASVABGS=5 THEN SASVABGS=36;
IF ASVABSP=9 THEN SASVABSP=40;  IF ASVABGS=6 THEN SASVABGS=38;
IF ASVABSP=10 THEN SASVABSP=42; IF ASVABGS=7 THEN SASVABGS=40;
IF ASVABSP=11 THEN SASVABSP=45; IF ASVABGS=8 THEN SASVABGS=42;
IF ASVABSP=12 THEN SASVABSP=47; IF ASVABGS=9 THEN SASVABGS=45;
IF ASVABSP=13 THEN SASVABSP=50; IF ASVABGS=10 THEN SASVABGS=47;
IF ASVABSP=14 THEN SASVABSP=52; IF ASVABGS=11 THEN SASVABGS=49;
IF ASVABSP=15 THEN SASVABSP=54; IF ASVABGS=12 THEN SASVABGS=52;
IF ASVABSP=16 THEN SASVABSP=57; IF ASVABGS=13 THEN SASVABGS=54;
IF ASVABSP=17 THEN SASVABSP=59; IF ASVABGS=14 THEN SASVABGS=56;
IF ASVABSP=18 THEN SASVABSP=61; IF ASVABGS=15 THEN SASVABGS=58;
IF ASVABSP=19 THEN SASVABSP=64; IF ASVABGS=16 THEN SASVABGS=61;
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IF ASVABSP=20 THEN SASVABSP=66;
IF ASVABMK=0 THEN SASVABMK=26;
IF ASVABMK=1 THEN SASVABMK=28;
IF ASVABGS=20 THEN SASVABGS=70;
IF ASVABAI=0 THEN SASVABAI=26;
IF ASVABAI=1 THEN SASVABAI=28;
IF ASVABAI=2 THEN SASVABAI=30;
IF ASVABAI=3 THEN SASVABAI=32;
IF ASVABAI=4 THEN SASVABAI=34;
IF ASVABAI=5 THEN SASVABAI=36;
IF ASVABAI=6 THEN SASVABAI=38;
IF ASVABAI=7 THEN SASVABAI=40;
IF ASVABAI=8 THEN SASVABAI=42;
IF ASVABAI=9 THEN SASVABAI=44;
IF ASVABAI=10 THEN SASVABAI=46;
IF ASVABAI=11 THEN SASVABAI=48;
IF ASVABAI=12 THEN SASVABAI=50;
IF ASVABAI=13 THEN SASVABAI=52;
IF ASVABAI=14 THEN SASVABAI=55;
IF ASVABAI=15 THEN SASVABAI=57;
IF ASVABAI=16 THEN SASVABAI=59;
IF ASVABAI=17 THEN SASVABAI=61;
IF ASVABAI=18 THEN SASVABAI=63;
IF ASVABAI=19 THEN SASVABAI=65;
IF ASVABAI=20 THEN SASVABAI=67;
IF ASVABSI=0 THEN SASVABSI=20;
IF ASVABSI=1 THEN SASVABSI=21;
IF ASVABSI=2 THEN SASVABSI=23;
IF ASVABSI=3 THEN SASVABSI=25;
IF ASVABSI=4 THEN SASVABSI=28;
IF ASVABSI=5 THEN SASVABSI=30;
IF ASVABSI=6 THEN SASVABSI=32;
IF ASVABSI=7 THEN SASVABSI=35;
IF ASVABSI=8 THEN SASVABSI=37;
IF ASVABSI=9 THEN SASVABSI=39;
IF ASVABSI=10 THEN SASVABSI=42;
IF ASVABSI=11 THEN SASVABSI=44;
IF ASVABSI=12 THEN SASVABSI=46;
IF ASVABSI=13 THEN SASVABSI=48;
IF ASVABSI=14 THEN SASVABSI=51;
IF ASVABSI=15 THEN SASVABSI=53;
IF ASVABSI=16 THEN SASVABSI=55;
IF ASVABSI=17 THEN SASVABSI=58;
IF ASVABSI=18 THEN SASVABSI=60;
IF ASVABSI=19 THEN SASVABSI=62;
IF ASVABSI=20 THEN SASVABSI=65;
IF ASVABWK=0 THEN SASVABWK=23;
IF ASVABWK=1 THEN SASVABWK=24;
IF ASVABWK=2 THEN SASVABWK=26;
IF ASVABWK=3 THEN SASVABWK=27;
IF ASVABWK=4 THEN SASVABWK=28;
IF ASVABWK=5 THEN SASVABWK=30;
IF ASVABWK=6 THEN SASVABWK=31;
IF ASVABWK=7 THEN SASVABWK=33;
IF ASVABWK=8 THEN SASVABWK=34;
IF ASVABWK=9 THEN SASVABWK=35;
IF ASVABWK=10 THEN SASVABWK=37;
IF ASVABWK=11 THEN SASVABWK=38;
IF ASVABWK=12 THEN SASVABWK=39;
IF ASVABWK=13 THEN SASVABWK=41;
IF ASVABWK=14 THEN SASVABWK=42;
IF ASVABWK=15 THEN SASVABWK=44;
IF ASVABWK=16 THEN SASVABWK=45;
IF ASVABWK=17 THEN SASVABWK=46;
IF ASVABWK=18 THEN SASVABWK=48;
IF ASVABWK=19 THEN SASVABWK=49;
IF ASVABWK=20 THEN SASVABWK=50;
IF ASVABWK=21 THEN SASVABWK=52;
IF ASVABWK=22 THEN SASVABWK=53;
IF ASVABGS=17 THEN SASVABGS=63;
IF ASVABGS=18 THEN SASVABGS=65;
IF ASVABGS=19 THEN SASVABGS=68;
IF ASVABWK=30 THEN SASVABWK=64;
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IF ASVABAD=1 THEN SASVABAD=20;
IF ASVABAD=2 THEN SASVABAD=20;
IF ASVABAD=3 THEN SASVABAD=21;
IF ASVABAD=4 THEN SASVABAD=24;
IF ASVABAD=5 THEN SASVABAD=26;
IF ASVABAD=6 THEN SASVABAD=29;
IF ASVABAD=7 THEN SASVABAD=31;
IF ASVABAD=8 THEN SASVABAD=34;
IF ASVABAD=9 THEN SASVABAD=36;
IF ASVABAD=10 THEN SASVABAD=39;
IF ASVABAD=11 THEN SASVABAD=41;
IF ASVABAD=12 THEN SASVABAD=44;
IF ASVABAD=13 THEN SASVABAD=46;
IF ASVABAD=14 THEN SASVABAD=49;
IF ASVABAD=15 THEN SASVABAD=51;
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IF ASVABAD=17 THEN SASVABAD=57;
IF ASVABAD=18 THEN SASVABAD=59;
IF ASVABAD=19 THEN SASVABAD=62;
IF ASVABAD=20 THEN SASVABAD=64;
IF ASVABAD=21 THEN SASVABAD=67;
IF ASVABAD=22 THEN SASVABAD=69;
IF ASVABAD=23 THEN SASVABAD=72;
IF ASVABAD=24 THEN SASVABAD=74;
IF ASVABAD=25 THEN SASVABAD=77;
IF ASVABAD=26 THEN SASVABAD=79;
IF ASVABAD=27 THEN SASVABAD=80;
IF ASVABAD=28 THEN SASVABAD=80;
IF ASVABAD=29 THEN SASVABAD=80;
IF ASVABAD=30 THEN SASVABAD=80;
IF ASVABEI=0 THEN SASVABEI=20;
IF ASVABEI=1 THEN SASVABEI=20;
IF ASVABEI=2 THEN SASVABEI=21;
IF ASVABEI=3 THEN SASVABEI=22;
IF ASVABEI=4 THEN SASVABEI=24;
IF ASVABEI=5 THEN SASVABEI=26;
IF ASVABEI=6 THEN SASVABEI=27;
IF ASVABEI=7 THEN SASVABEI=29;
IF ASVABEI=8 THEN SASVABEI=31;
IF ASVABEI=9 THEN SASVABEI=32;
IF ASVABEI=10 THEN SASVABEI=34;
IF ASVABEI=11 THEN SASVABEI=36;
IF ASVABEI=12 THEN SASVABEI=37;
IF ASVABEI=13 THEN SASVABEI=39;
IF ASVABEI=14 THEN SASVABEI=41;
IF ASVABEI=15 THEN SASVABEI=42;
IF ASVABEI=16 THEN SASVABEI=44;
IF ASVABEI=17 THEN SASVABEI=46;
IF ASVABEI=18 THEN SASVABEI=48;
IF ASVABEI=19 THEN SASVABEI=49;
IF ASVABEI=20 THEN SASVABEI=51;
IF ASVABEI=21 THEN SASVABEI=53;
IF ASVABEI=22 THEN SASVABEI=54;
IF ASVABEI=23 THEN SASVABEI=56;
IF ASVABEI=24 THEN SASVABEI=58;
IF ASVABEI=25 THEN SASVABEI=59;
IF ASVABEI=26 THEN SASVABEI=61;
IF ASVABEI=27 THEN SASVABEI=63;
IF ASVABEI=28 THEN SASVABEI=64;
IF ASVABEI=29 THEN SASVABEI=66;
IF ASVABEI=30 THEN SASVABEI=68;
IF ASVABNO=0 THEN SASVABNO=20;
IF ASVABNO=1 THEN SASVABNO=20;
IF ASVABNO=2 THEN SASVABNO=21;
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IF ASVABWK=23 THEN SASVABWK=55; IF ASVABNO=3 THEN SASVABNO=22;
IF ASVABWK=24 THEN SASVABWK=56; IF ASVABNO=4 THEN SASVABNO=23;
IF ASVABWK=25 THEN SASVABWK=57; IF ASVABNO=5 THEN SASVABNO=24;
IF ASVABWK=26 THEN SASVABWK=59; IF ASVABNO=6 THEN SASVABNO=25;
IF ASVABWK=27 THEN SASVABWK=60; IF ASVABNO=7 THEN SASVABNO=26;
IF ASVABWK=28 THEN SASVABWK=62; IF ASVABNO=8 THEN SASVABNO=27;
IF ASVABWK=29 THEN SASVABWK=63; IF ASVABNO=9 THEN SASVABNO=28;
IF ASVABNO=10 THEN SASVABNO=29; IF ASVABNO=31 THEN SASVABNO=50;
IF ASVABNO=11 THEN SASVABNO=30; IF ASVABNO=32 THEN SASVABNO=51;
IF ASVABNO=12 THEN SASVABNO=31; IF ASVABNO=33 THEN SASVABNO=52;
IF ASVABNO=13 THEN SASVABNO=32; IF ASVABNO=34 THEN SASVABNO=53;
IF ASVABNO=14 THEN SASVABNO=33; IF ASVABNO=35 THEN SASVABNO=54;
IF ASVABNO=15 THEN SASVABNO=34; IF ASVABNO=36 THEN SASVABNO=55;
IF ASVABNO=16 THEN SASVABNO=35; IF ASVABNO=37 THEN SASVABNO=56;
IF ASVABNO=17 THEN SASVABNO=36; IF ASVABNO=38 THEN SASVABNO=57;
IF ASVABNO=18 THEN SASVABNO=37; IF ASVABNO=39 THEN SASVABNO=58;
IF ASVABNO=19 THEN SASVABNO=38; IF ASVABNO=40 THEN SASVABNO=59;
IF ASVABNO=20 THEN SASVABNO=39; IF ASVABNO=41 THEN SASVABNO=60;
IF ASVABNO=21 THEN SASVABNO=40; IF ASVABNO=42 THEN SASVABNO=61;
IF ASVABNO=22 THEN SASVABNO=41; IF ASVABNO=43 THEN SASVABNO=62;
IF ASVABNO=23 THEN SASVABNO=42; IF ASVABNO=44 THEN SASVABNO=63;
IF ASVABNO=24 THEN SASVABNO=43; IF ASVABNO=45 THEN SASVABNO=64;
IF ASVABNO=25 THEN SASVABNO=44; IF ASVABNO=46 THEN SASVABNO=65;
IF ASVABNO=26 THEN SASVABNO=45; IF ASVABNO=47 THEN SASVABNO=66;
IF ASVABNO=27 THEN SASVABNO=46; IF ASVABNO=48 THEN SASVABNO=67;
IF ASVABNO=28 THEN SASVABNO=47; IF ASVABNO=49 THEN SASVABNO=68;
IF ASVABNO=29 THEN SASVABNO=48; IF ASVABNO=50 THEN SASVABNO=69;
IF ASVABNO=30 THEN SASVABNO=49;


------------------------------------------------------------------
* IN THIS SECTION, NUMBER OF YEARS OF EDUCATION IS CONVERTED
  FROM ITS DMDC ORDINAL CODING (1-13) TO A "RAW" FIGURE.  IN
  GENERAL, THE TRANSFORMATION IS ISOMORPHIC, BUT 3-4 YRS OF
  HIGH SCHOOL IS CODED AS "11", G.E.D. IS CODED AS "11.5",
  3-4 YRS OF COLLEGE IS CODED AS "15", M.A. IS "18", AND PH.D.
  IS "20".  THE OLD VARIABLE IS LABELED "HYEC", AND THE NEW
  VARIABLE IS LABELED "CHYEC.";
------------------------------------------------------------------

IF HYEC=1 THEN CHYEC=3.5;IF HYEC=2 THEN CHYEC=8;
IF HYEC=3 THEN CHYEC=9;
IF HYEC=4 THEN CHYEC=10;IF HYEC=5 THEN CHYEC=11;
IF HYEC=6 THEN CHYEC=12;
IF HYEC=7 THEN CHYEC=13;IF HYEC=8 THEN CHYEC=14;
IF HYEC=9 THEN CHYEC=15;
IF HYEC=10 THEN CHYEC=16;IF HYEC=11 THEN CHYEC=18;
IF HYEC=12 THEN CHYEC=20;
IF HYEC=13 THEN CHYEC=11.5;

------------------------------------------------------------------
*THE FOLLOWING LINES OPERATIONALLY DEFINE THE NEW VARIABLE
 "HSDG".  IF THE CASE EITHER DID NOT GRADUATE FROM HIGH SCHOOL,
 OR EVENTUALLY RECEIVED A G.E.D. CERTIFICATE, THE NUMERIC
 VALUE OF HSDG=1.;
------------------------------------------------------------------

IF ((HYEC LE 5) OR (HYEC EQ 13)) THEN HSDG=0;
IF ((HYEC GE 6) AND (HYEC NE 13)) THEN HSDG=1;

------------------------------------------------------------------
*VARIABLES' VALIDITY VALUE SCREENS AND RECODES,
 PLUS LOGIC COMMENTARIES;
------------------------------------------------------------------

IF ((SCHICODE='A') OR (STACTION='P')) THEN NUSCHCDE=1;
ELSE NUSCHCDE=0;
* THE PRECEDING CODES THOSE WHO SHOWED EITHER MARK OF
"A-SCHOOL PASSAGE.;
```

```
NUATTRIT=ATTRITCD+0;IF NUATTRIT=2 THEN NUATTRIT=1;
ELSE NUATTRIT=0;
* THE PRECEDING CONVERTS THE N.H.R.C. ATTRITION CODE FROM
A CHARACTER TO A NUMERIC VARIABLE.;
NUNOTRC=NOTRCMD+0;
* THE PRECEDING CONVERTS THE N.H.R.C. VARIABLE
  "NOT RECOMMENDED FOR REENLISTMENT"
  FROM A CHARACTER TO A NUMERIC VARIABLE.;
NUHYPAY=HYPAYGRD+0;
* THE PRECEDING CONVERTS THE N.H.R.C. VARIABLE
  "HIGHEST PAYGRADE ATTAINED"
  FROM A CHARACTER TO A NUMERIC VARIABLE.;

----------------------------------------------------------------------
* THE FOLLOWING STATEMENTS CREATE A NEW VARIABLE 'LORMNTHS'
  BY CHANGING THE 4 DIGIT (YEARS AND MONTHS) CODING OF
  'LNTHSRV' TO STRAIGHT MONTHS USING THE 'SUBSTR' COMMAND;
----------------------------------------------------------------------

YEAR=SUBSTR(LNGTHSRV,1,2);
MONTH=SUBSTR(LNGTHSRV,3,2);
YEARS=YEAR+0; MONTHS=MONTH+0;
LORMNTHS=YEARS*12+MONTHS;

----------------------------------------------------------------------
*THE NEXT TWO LINES OPERATIONALLY DEFINE 'HIGHEST PAYGRADE
 ATTAINED' AS LISTED IN THE DMDC ACTIVE (1) OR LOSS (3) FILE
 SECTIONS.  THOSE WHO HAVE INCONSISTENCIES BETWEEN THE DMDC
 FILE AND THE NHRC FILE AS TO HGIHEST PAYGRADE ARE REMOVED.
 (sic.);
----------------------------------------------------------------------

IF FILEFLG1=8209 THEN PAYGRADE=PAYGRDE1;
IF FILEFLG1 NE 8209 THEN PAYGRADE=PAYGRDE3;
IF PAYGRADE=0 THEN PAYGRADE=PAYGRDE1;
IF PAYGRADE=0 THEN PAYGRADE=.;

----------------------------------------------------------------------
* THE FOLLOWING LINES OPERATIONALLY DEFINE 'ELIGIBILITY TO
  REENLIST'.  IF A CASE IS STILL ON ACTIVE DUTY, THEN
  FILEFLAG1 SHOULD EQUAL '0'.  SUCH A CASE, BY DEFINITION,
  SHOULD HAVE BEEN ELIGIBLE TO REENLIST.  IF NOT CURRENTLY
  ON ACTIVE DUTY, THE LOSS-FILE SECTION OF THE DMDC COHORT
  FILE REVEALS WHETHER THE CASE WOULD HAVE BEEN ELIGIBLE;
----------------------------------------------------------------------

IF FILEFLG1=8209 THEN ELIGREUP=1;
IF ((FILEFLG1 NE 8209) AND (ISC3 GT 0) AND (ELIGREUP3 EQ 1))
   THEN ELIGREUP=1;ELSE ELIGREUP=0;

----------------------------------------------------------------------
* THE NEXT SECTION OPERATIONALLY DEFINES A SO-CALLED 'STANDARD'
  ATTRITION CODE, VIZ., ALL 'STANDARD' RELEASES AND OFFICER
  PROGRAM ENTRANCE CASES AS WELL AS CURRENT ACTIVE DUTY, ARE
  DEFINED AS '0', WHILE ALL OTHER DEPARTURES ARE FLAGGED AS
  A '1'.;
----------------------------------------------------------------------

IF FILEFLG1=8209 THEN ATTRITC2=0;
IF FILEFLG1 NE 8209 AND ((ISC3 LT 10) OR (ISC3 EQ 40))
THEN ATTRITC2=0;
IF FILEFLG1 NE 8209 AND ((ISC3 GE 10) AND (ISC3 NE 40))
THEN ATTRITC2=1;

----------------------------------------------------------------------
* THE NEXT SECTION OPERATIONALLY DEFINES A 'NEGATIVE' ATTRITION
  AS OPPOSED TO A 'STANDARD" ATTRITION. (SEE ABOVE.);
----------------------------------------------------------------------
```

```
IF FILEFIG1=8209 THEN ATTRITC3=0;
IF FILEFIG1 NE 8209 AND ((ISC3 LT 60) OR (ISC3 GE 90))
THEN ATTRITC3=0;
IF FILEFIG1 NE 8209 AND ((ISC3 GE 60) AND (ISC3 LE 89))
THEN ATTRITC3=1;

-------------------------------------------------------------------
* THE NEXT TWO LINES OPERATIONALLY DEFINE 'ACHIEVED E-4',
  IN JOINT CONSIDERATION OF THE DMDC FILE AND THE NHRC FILE.;
-------------------------------------------------------------------

IF ((PAYGRADE GE 4) AND (HYPAYGRD GE 4)) THEN ACHVDE4=1;
IF ((PAYGRADE LT 4) OR (HYPAYGRD LT 4)) THEN ACHVDE4=0;

-------------------------------------------------------------------
*THE NEXT THREE LINES OPERATIONALLY DEFINE 'RATED' VERSUS
 'NON-RATED'.  TO BE RATED, A CASE HAD TO BE NOT MISSING NOR
 BLANK AT EXIT (DMDCRATE), HAD TO HAVE ACCESSED AND STILL
 BEEN A MEMBER OF THE NAVY, AND HAD TO HAVE ACHIEVED E-4
 ON BOTH THE DMDC AND NHRC FILES.;
-------------------------------------------------------------------

IF ((DMDCRATE NE '.') AND (DMDCRATE NE ' ') AND (SERVACCS EQ 2) AND
   (SERVICE1 EQ 2) AND ((PAYGRADE GE 4) AND (HYPAYGRD GE 4))) THEN
   RATED=1;ELSE RATED=0;

IF MBTLDEND=10 THEN DEPENDTS=0; ELSE DEPENDTS=1;
* RECODING

-------------------------------------------------------------------
 *THE FOLLOWING LINES SEGMENT THE DIFFERENT "ENTRY GROUPS",
 viz.,
 (1) THOSE CASES WHICH SIGNED UP FOR A RATING, TOOK
     ADVANCEMENT EXAMINATION IN THAT RATING, AND
     AND ULTIMATELY SHOWED UP IN THAT
     RATING IN THE DMDC ACTIVE/LOSS FILES.
  (2) THOSE CASES WHICH SIGNED UP FOR A RATING,
      TOOK THE ADVANCEMENT EXAMINATION IN THAT RATING,
      AND ULTIMATELY SHOWED UP IN ANOTHER
      RATING IN THE DMDC ACTIVE/LOSS FILES.
  (3) THOSE CASES WHICH SIGNED UP FOR A RATING,
      MIGRATED TO OTHER RATINGS FOR THE
      ADVANCEMENT EXAMINATION, BUT FOR THE DMDC
      FILE LISTINGS SHOWED UP IN THE ORIGINAL RATING.
  (4) THOSE CASES WHICH SIGNED UP FOR A RATING,
      BUT MIGRATED TO OTHER RATINGS, BOTH FOR
      THE ADVANCEMENT EXAM, AND ULTIMATELY IN THE
      DMDC ACTIVE/LOSS FILES.
  (5) THOSE CASES WHICH DID NOT SIGN UP FOR A GIVEN
      RATING, BUT TOOK THE ADVANCEMENT EXAM IN THAT
      RATING, AND ULTIMATELY WOUND UP IN
      THAT RATING IN THE DMDC ACTIVE/LOSS FILES.
      POTENTIALLY, THESE REPRESENT GENERAL
      AS WELL AS "FLEET TRANRMISSIONS".
  (6) THOSE CASES WHICH DID NOT SIGN UP FOR A GIVEN
      RATINGS BUT TOOK THE ADVANCEMENT EXAM IN THAT
      RATING, AND ULTIMATELY MIGRATED TO AN ALTER-
      NATIVE RATING IN THE DMDC ACTIVE/LOSS FILES.
  (7) THOSE CASES WHICH DID NOT SIGN UP FOR A GIVEN
      RATING, DID NOT TAKE THE ADVANCEMENT EXAM IN
      THAT RATING, BUT ULTIMATELY SHOWED up in
      THAT RATING IN THE DMDC ACTIVE/LOSS FILES.
-------------------------------------------------------------------

IF (RCPGSCRT='1500' AND EXAMRATE='1500' AND DMDCRATE='RM')
THEN ENTRYGRP=1;
IF (RCPGSCRT='1500' AND EXAMRATE='1500' AND DMDCRATE NE 'RM')
THEN ENTRYGRP=2;
IF (RCPGSCRT='1500' AND EXAMRATE NE '1500' AND DMDCRATE='RM')
```

```
THEN ENTRYGRP=3;
IF (RCPGSCRT='1500' AND EXAMRATE NE '1500' AND DMDCRATE NE 'RM')
THEN ENTRYGRP=4;
IF (RCPGSCRT NE '1500' AND EXAMRATE='1500' AND DMDCRATE='RM')
THEN ENTRYGRP=5;
IF (RCPGSCRT NE '1500' AND EXAMRATE='1500' AND DMDCRATE NE 'RM')
THEN ENTRYGRP=6
IF (RCPGSCRT NE '1500' AND EXAMRATE NE '1500' AND DMDCRATE='RM')
THEN ENTRYGRP=7;

LABEL
HSDG    =HIGH-SCHOOL GRADUATE(1) V. OTHER(0)
DEPENDTS=SINGLE, NO DEPENDENTS (0), OTHERWISE (1)
CNYEC   =CONVERTED NUMBER OF YEARS OF EDUCATION
NUHYPAY =NHRC FILE--HIGHEST PAYGRADE ATTAINED
NUSCHCDE=ADVANCEMENT FILE--''A'' SCHOOL COMPLETED
NUATTRIT=NHRC FILE--ATTRITION CODES
NUNCTRC =NHRC--NOT RECOMMENDED FOR RE-ENLISTMENT
ELIGREUP=ELIGIBLE TO RE-ENLIST
ATTRITC2=DMDC-BASED STANDARD ATTRITION MEASURE
ATTRITC3=DMDC-BASED NEGATIVE ATTRITION MEASURE
PAYGRADE=DMDC-BASED HIGHEST PAY-GRADE ATTAINED
ACHVDE4 =DMDC & NHRC CONCORDANT E-4 ACHIEVED
RATED   =ACCESSED & MOST RECENTLY NAVY--MADE E-4
SASVABGI=STANDARDIZED SCORE - GENERAL INFORMATION
SASVABAD=STANDARDIZED SCORE - ATTENTION TO DETAIL
SASVABWK=STANDARDIZED SCORE - WORD KNOWLEDGE
SASVABAR=STANDARDIZED SCORE - ARITHMETIC REASONING
SASVABSP=STANDARDIZED SCORE - SPACE PERCEPTION
SASVABMK=STANDARDIZED SCORE - MATH KNOWLEDGE
SASVABEI=STANDARDIZED SCORE - ELECTRONIC INFO
SASVABNO=STANDARDIZED SCORE - NUMERICAL OPERATIONS
SASVABMC=STANDARDIZED SCORE - MECH COMPREHENSION
SASVABGS=STANDARDIZED SCORE - GENERAL SCIENCE
SASVABSI=STANDARDIZED SCORE - SHOP INFORMATION
SASVABAI=STANDARDIZED SCORE - AUTO INFORMATION
ENTRYGRP=ENTRY GROUP CLASSIFICATIONS
LORMNTHS=LOS IN MONTHS (NUMERIC);

IF DMDCRATE='RM' OR PRRTABRV='RM' OR RCPGSCRT='1500'
OR EXAMRATE='1500';
*    THIS SCREEN SELECTS ONLY THE 'RM' RATING.;
IF NUHYPAY=PAYGRADE THEN PAYMATCH=1; ELSE PAYMATCH=0;
*    TO SEE IF THE NHRC AND DMDC FILES AGREE ON HIGHEST
     PAYGRADE REACHED.;
LABEL
PAYMATCH=(1) NHRC & DMDC HYPAY MATCH,(0) NO MATCH;


PROC FREQ;
     TABLES ENTRYGRP LORMNTHS RATED PAYGRADE ACHVDE4 ATTRITC2
            ATTRITC3 ETHNIC SEX PRIORSRV TOTCVLCN
            ELIGREUP HSDG DEPENDTS TERMENLT AFQTGRPS RACE
            ENTRYAGE ENTRPAYG LNGTHSRV NUHYPAY NUSCHCDE SCREEN
            TOTPROMO TOTLDEMO TOTLAWOL TOTDESRT TOTMLTCN
            DMDCRATE EXAMRATE RCPGSCRT PAYMATCH;
TITLE SOME FREQUENCIES FROM THE 'RM' DATA SUBSET.;
/*
//
```

TABLE XXVI

FREQUENCY AND UNIVARIATE PROGRAM

```
//STEP2 JOB (3115,0103),'GAGNER',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//   EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.RMDATA
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
DATA;SET FILEIN.RMDATA;

*THIS PROGRAM RUNS FREQUENCIES, UNIVARIATES, AND DOES
 SELECTED CASE DUMPS FOR USE IN GAINING FAMILIARITY WITH
 THE DATA BASE.  IT CAN BE EDITED AND RERUN AT ANY
 DURING THE ANALYSIS PROCESS;

*THIS PORTION REQUESTS FREQUENCIES;

PROC FREQ;
TABLES ENTRYGRP ISC3 SEX GROUP
       RECENLST REUP ELIGREUP CHYEC HSDG ENTRPAYG
       NUHYPAY PRIORSRV DMDCRATE EXAMRATE RCPGSCRT
       TERMENLT AFQTGRPS DEPENDTS  ATTRITC2
       TAFMS1 SCREEN  ACHVDE4 ENTRYAGE
       MNTHSDEP AFQTPCNT CHARSRV1 RATED
       ELGREUP1 ELGREUP2 NOTRCMD
       BLACK OTHER;
TITLE SOME FREQS FROM DATA BASE AFTER MAJOR SCREENINGS;

*THIS PORTION ASKS FOR UNIVARIATE INFORMATION;

PROC UNIVARIATE DATA=MERGED;
VAR ENTRYAGE ENTRPAYG DEPENDTS CHYEC SCREEN ACHVDE4 NUHYPAY
ELIGREUP TAFMS1 SASVABAR SASVABAD SASVABAI SASVABEI
SASVABGI SASVABGS SASVABMK SASVABMC
SASVABNO SASVABSI SASVABSP SASVABWK AFQTPCNT;
PROC FREQ DATA=MERGED;
TABLES ENTRYGRP SEX RACE HSDG NOTRCMD ISC3 GROUP;

*THIS PORTION PROVIDES CASEDUMPS ON TEN CASES FOR
VARIBALES REQUESTED;
DATA ;SET FILEIN.RMDATA;IF ((_N_ GE 3) AND (_N_ LE 12));
PROC PRINT DOUBLE ROUND LABEL;
VAR
ENTRYYR ENTRYMTH ENTRYDAY
ENTRYAGE AGE SEX HYEC
AFQTPCNTSASVABAD--SASVABWK
AFQTGRPS MENTLGRP SCREEN
TERMENLT LNGTHSRV ENTRPAYG NDAYSE2
NDAYSE3 NDAYSE4  RCPGSCRT
PRESRATE PRRTABRV EXAMRATE EXRTABRV DMDCRATE DMDCNEC
FILEFIG1 TAFMS1 SEPRT3YR
SEPRT3MT SEPRT3DY ISC3 CHARSRV3 ELGREUP3 ELGREUP1;
TITLE DUMPING SOME RECORDS;
/*
//
```

TABLE XXVII

SCREEN PROGRAM

```
//STEP3 JOB (3115,0103),'GAGNER',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//   EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP) ,DSN=MSS.S3115.RMDATA
//FILEOUT DD DISP=(NEW,CATLG,DELETE),UNIT=3330V,MSVGP=PUB4Z,
//    DSN=MSS.S3115.RMSCREEN
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
DATA;SET FILEIN.RMDATA;

*THIS PROGRAM CONTAINS ALL THE RELEVANT
INFORMATION REGARDING SCREENS AND/OR VARIABLES
CREATED IN THE SM AND RM DATA SETS
FOR USE IN ANALYSIS FOR THESIS;

*TO SCREEN OUT MISSING DATA;

KEEP = 0;
IF (TAFMS1 GE 72) THEN KEEP=9;
IF KEEP NE 9;

* TO SCREEN OUT OUTLYERS IN TAFMS1 DATA;

IF TAFMS1 LE 72;

* TO KEEP IN ONLY PEOPLE WHO DID NOT MIGRATE
  OUT OF THE RATING;

KEEP=0;
IF (ENTRYGRP=2) THEN KEEP=9;
IF (ENTRYGRP=4) THEN KEEP=9;
IF (ENTRYGRP=6) THEN KEEP=9;
IF KEEP NE 9;

* TO SCREEN OUT DISCHARGES FOR REASONS WHICH ARE
  NOT CONSIDERED NEGATIVES SUCH AS HARDSHIP,RETIREMENT,
  PREGNANCY, MEDICAL,DEATH, AND OFFICER PROGRAM ENTRY.
  TO SCREEN OUT ALL EXCEPT 4 YR ACDU
  OBLIGATED NAVY PERSONNEL;

IF(ISC3=22) THEN KEEP=9;
IF(ISC3 GE 50) AND (ISC3 LE 52) THEN KEEP=9;
IF(ISC3=94) THEN KEEP=9;
IF((ISC3 GE 10) AND (ISC3 LE 16)) THEN KEEP=9;
IF((ISC3 GE 30) AND (ISC3 LE 33)) THEN KEEP=9;
IF((ISC3 GE 40) AND (ISC3 LE 42)) THEN KEEP=9;
IF KEEP NE 9;

IF RECENIST=11;
KEEP=0;

IF (ENTRYGRP=2) THEN KEEP=9;
IF (ENTRYGRP=4) THEN KEEP=9;
IF (ENTRYGRP=6) THEN KEEP=9;
IF KEEP NE 9;

*TO RECODE RACE AS A DUMMY VARIABLE BY CREATING VARIBLES
 BLACK AND OTHER;

IF RACE =2 THEN BLACK =1; ELSE BLACK = 0;
IF RACE =3 THEN OTHER =1; ELSE OTHER = 0;

*TO GENERATE NO. OF DAYS SERVED, CONTRACT FULFILLMENT, AND
```

```
 RE-ENLISTMENT;
          ENTRDATE=MDY(ENTRYMTH,ENTRYDAY,ENTRYYR);

           ENDCLOCK=MDY(9,30,82);

IF ((FILEFLG1=8209) AND (SEPRT3YR NE 0)) THEN
          SEPARATL=MDY(SEPRT3MT,SEPRT3DY,SEPRT3YR);
IF ((FILEFLG1 NE 8209) AND (SEPRT3YR=0)) THEN
          SEPARATL=MDY(SEPRT1MT,SEPRT1DY,SEPRT1YR);
IF ((FILEFLG1 NE 8209) AND (SEPRT3YR NE 0)) THEN
          SEPARATL=MDY(SEPRT3MT,SEPRT3DY,SEPRT3YR);

           TERMSERV=SEPARATL-ENTRDATE;

IF ((FILEFLG1=8209) AND (SEPRT3YR=0)) THEN
           TERMSERV=ENDCLOCK-ENTRDATE;

IF (((TERMSERV GE 1460) OR (ISC3 LE 1)) AND TERMENLT=4)
THEN CONTRACT='COMPLETED';
IF (((TERMSERV LT 1460) AND (ISC3 GT 1)) AND TERMENLT=4)
THEN CONTRACT='BROKEN   ';
IF (((TERMSERV GE 2159) OR (ISC3 LE 1)) AND TERMENLT=6)
THEN CONTRACT='COMPLETED';
IF (((TERMSERV LT 2159) AND (ISC3 GT 1)) AND TERMENLT=6)
THEN CONTRACT='BROKEN   ';

              IF CONTRACT='COMPLETED' THEN OKSERVCE=1;
              IF CONTRACT='BROKEN   ' THEN OKSERVCE=0;

IF DOLE1YR=ENTRYYR THEN REENLIST='DID NOT RE-ENLIST';
IF ((DOLE1YR NE .) AND (DOLE1YR NE ENTRYYR)
AND (CONTRACT='COMPLETED')) REENLIST='RE-ENLISTED';

IF DOLE1YR=ENTRYYR THEN REUP=0;
          IF REENLIST='RE-ENLISTED' THEN REUP=1;

LABEL
REUP    =CASE RE-ENLISTED (1)
OKSERVCE=CONTRACT COMPLETED
ENTRDATE=DATE OF ENTRY--S.A.S. CALENDAR
SEPARATL=SEPARATION DATE--LOSS FILE--SAS CALENDAR
TERMSERV=NUMBER OF DAYS IN SERVICE
CONTRACT=SERVICE CONTRACT COMPLETED OR BROKEN
REENLIST=DID THE CASE RE-ENLIST;

*SN PROGRAM ALSO SCREENED OUT ALL FEMALES BY USING
THE IF SEX=1 COMMAND AND THE KEEP=0 COMMAND;
/*
//
```

TABLE XXVIII

RANDOM SAMPLE SPLIT PROGRAM

```
//STEP4A JOB (3115,0103),'GAGNER',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//   EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.RMSCREEN
//FILEOUT DD DISP=(OLD,KEEP),UNIT=3330V,MSVGP=PUB4B,
//   DSN=MSS.S3115.SPLITS
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;

*THIS PROGRAM SPLITS DATA INTO TWO RANDOM SAMPLES
BY GROUP;

DATA WHMALE;SET FILEIN.CORRECT;IF GROUP=1;
 IF UNIFORM(17951)<=.5 THEN SPLIT1=1; ELSE SPLIT1=0;
 IF UNIFORM(17953)<=.5 THEN SPLIT2=1; ELSE SPLIT2=0;
 IF UNIFORM(17955)<=.5 THEN SPLIT3=1; ELSE SPLIT3=0;
DATA BLMALE;SET FILEIN.CORRECT;IF GROUP=2;
 IF UNIFORM(17951)<=.5 THEN SPLIT1=1; ELSE SPLIT1=0;
 IF UNIFORM(17953)<=.5 THEN SPLIT2=1; ELSE SPLIT2=0;
 IF UNIFORM(17955)<=.5 THEN SPLIT3=1; ELSE SPLIT3=0;
DATA WHFMLE;SET FILEIN.CORRECT;IF GROUP=3;
 IF UNIFORM(17951)<=.5 THEN SPLIT1=1; ELSE SPLIT1=0;
 IF UNIFORM(17953)<=.5 THEN SPLIT2=1; ELSE SPLIT2=0;
 IF UNIFORM(17955)<=.5 THEN SPLIT3=1; ELSE SPLIT3=0;
DATA BLFMLE;SET FILEIN.CORRECT;IF GROUP=4;
 IF UNIFORM(17951)<=.5 THEN SPLIT1=1; ELSE SPLIT1=0;
 IF UNIFORM(17953)<=.5 THEN SPLIT2=1; ELSE SPLIT2=0;
 if UNIFORM(17955)<=.5 THEN SPLIT3=1; ELSE SPLIT3=0;
DATA FILEOUT.RMSCREEN;SET WHMALE BLMALE WHFMLE BLFMLE;

*FOR SM FILE SPLITS WERE CREATED ONLY FOR TWO GROUPS;

/*
//
```

TABLE XXIX

ANALYSIS OF VARIANCE PROGRAM

```
//STEP4B JOB (3115,0103),'BMG',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//  EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.RMSCREEN
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;

*THIS PROGRAM DOES ANALYSIS OF VARIANCE
 ON RANDOM SAMPLES CREATED IN 4A
 TO ENSURE THAT THEY ARE STATISTICALLY EQUAL;

DATA WHMALE;SET FILEIN.RMSCREEN; IF GROUP = 1;
DATA WHFMLE;SET FILEIN.RMSCREEN; IF GROUP = 2;
DATA BLMALE;SET FILEIN.RMSCREEN; IF GROUP = 3;
DATA BLFMLE;SET FILEIN.RMSCREEN; IF GROUP = 4;

PROC GLM DATA=WHMALE; CLASSES SPLIT1 SPLIT2 SPLIT3;
MODEL ACHVDE4 TAFMS1 ELIGREUP
SASVABGI--SASVSBWK AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG=SPLIT1 SPLIT2 SPLIT3;MANOVA H=SPLIT1 SPLIT2 SPLIT3;
TITLE WHITE MALE RANDOM SPLITS;
PROC MEANS DATA=WHMALE;VAR ACHVDE4 TAFMS1 ELIGREUP
SASVABGI--SASVABWK AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG TERMENLT;

PROC GLM DATA=WHFMLE; CLASSES SPLIT1 SPLIT2 SPLIT3;
MODEL ACHVDE4 TAFMS1 ELIGREUP
SASVABGI--SASVSBWK AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG=SPLIT1 SPLIT2 SPLIT3;MANOVA H=SPLIT1 SPLIT2 SPLIT3;
TITLE WHITE FMLE RANDOM SPLITS;
PROC MEANS DATA=WHFMLE;VAR ACHVDE4 TAFMS1 ELIGREUP
SASVABGI--SASVABWK AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG TERMENLT;

PROC GLM DATA=BLMALE; CLASSES SPLIT1 SPLIT2 SPLIT3;
MODEL ACHVDE4 TAFMS1 ELIGREUP
SASVABGI--SASVSBWK AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG=SPLIT1 SPLIT2 SPLIT3;MANOVA H=SPLIT1 SPLIT2 SPLIT3;
TITLE BLACK MALE RANDOM SPLITS;
PROC MEANS DATA=BLMALE;VAR ACHVDE4 TAFMS1 ELIGREUP
SASVABGI--SASVABWK AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG TERMENLT;

PROC GLM DATA=BLFMLE; CLASSES SPLIT1 SPLIT2 SPLIT3;
MODEL ACHVDE4 TAFMS1 ELIGREUP
SASVABGI--SASVSBWK AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG=SPLIT1 SPLIT2 SPLIT3;MANOVA H=SPLIT1 SPLIT2 SPLIT3;
TITLE BLACK FMLE RANDOM SPLITS;
PROC MEANS DATA=BLFMLE;VAR ACHVDE4 TAFMS1 ELIGREUP
SASVABGI--SASVABWK AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG TERMENLT;

*FOR SM FILE THIS PROGRAM WAS RUN ONLY ON WHITE MALE AND
 BLACK MALE GROUPS;

/*
//
```

TABLE XXX

PROGRAM TO CREATE GROUPS IN VALID8 AND DERIV8

```
//STEP5 JOB (3115,0103),'GAGNER',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//   EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.SPLITS
//FILEOUT DD DISP=(NEW,CATLG,DELETE),UNIT=3330V,MSVGP=PUB4Z,
//   DSN=MSS.S3115.GOLD
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;

*THIS PROGRAM CREATES GROUPS WITHIN DERIVATION AND
 VALIDATION FILES;

DATA WHMDER;SET FILEIN.RMSCREEN;IF GROUP=1;IF SPLIT2=1;
DATA BLMDER;SET FILEIN.RMSCREEN;IF GROUP=2;IF SPLIT3=1;
DATA WHFDER;SET FILEIN.RMSCREEN;IF GROUP=3;IF SPLIT2=1;
DATA BLFDER;SET FILEIN.RMSCREEN;IF GROUP=4;IF SPLIT3=1;

DATA WHMVAL;SET FILEIN.RMSCREEN;IF GROUP=1;IF SPLIT2=0;
DATA BLMVAL;SET FILEIN.RMSCREEN;IF GROUP=2;IF SPLIT3=0;
DATA WHFVAL;SET FILEIN.RMSCREEN;IF GROUP=3;IF SPLIT2=0;
DATA BLFVAL;SET FILEIN.RMSCREEN;IF GROUP=4;IF SPLIT3=0;

DATA FILEOUT.DERIV8;SET WHMDER BLMDER WHFDER BLFDER;
DATA FILEOUT.VALID8;SET WHMVAL BLMVAL WHFVAL BLFVAL;

*FOR SM FILE ONLY WHMDER,BLMDER,WHMVAL,AND BLMVAL WERE
CREATED WHERE WHITE=GROUP1 BLACK=GROUP2 AND SPLIT1=1 FOR
DERIV8 and SPLIT1=0 FOR VALID8;

/*
//
```

TABLE XXXI

REGRESSION PROGRAM

```
//STEP6 JOB (3115,0103),'GAGNER',CLASS=C
//*MAIN ORG=NPGVM1.3115P
//   EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.GOLD
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
DATA;
  SET FILEIN.DERIV8;

*THESE ARE A SAMPLE OF SOME REGRESSIONS RUN
DURING THIS STEP.  DETAILS ARE PROVIDED
IN CHAPTER 5 REGARDING COMBINATIONS OF
VARIABLES AND ALTERNATE DEFINITIONS OF
THE VARIABLE SUCCESS;

*TO RECODE SEX AS A DUMMY VARIABLE BY CREATING
 VARIABLES MALE AND FEMALE FOR USE WITH RM FILE ONLY;
IF SEX = 1 THEN MALE = 1; ELSE MALE = 0;

*TO RE-DEFINE THE VARIABLE SUCCESS1;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS1 = 1;
ELSE SUCCESS1 = 0;
LABEL
SUCCESS1 = MEETS ALL CRITERIA (1), OTHER (0);

*FREQUENCY ON SUCCESS1;

PROC FREQ;
TABLES SUCCESS1;

* FOLLOWING ARE SOME REGRESSIONS USING DIFFERENT
  COMBINATIONS;

*BLOCK REGRESSIONS USING SUCCESS1 AS CRITERIA;

* REG ALL VARIABLES EXCEPT SCREEN;

PROC REG;
MODEL SUCCESS1 = AFQTPCNT  ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK
DEPENDTS MALE BLACK OTHER;
TITLE 'BLOCK REGRESSION USING ALL VARXSCR';

PROC REG;
MODEL SUCCESS1 = AFQTPCNT ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK
DEPENDTS;
BY GROUP;
TITLE 'BLOCK REGRESSION USING ALL VARXSCR BY GROUP';

*REG WITH ALL VARIABLES EXCEPT SCREEN AND AFQT';

PROC REG;
MODEL SUCCESS1 = ENTRPAYG ENTRYAGE HSDG BLACK OTHER
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK
DEPENDTS MALE;
TITLE 'BLOCK REGRESSION USING ALL VARXSCR AND AFQTPCNT';
```

```
PROC REG;
MODEL SUCCESS1 = AFQTPCNT ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK
DEPENDTS;
BY GROUP;
TITLE 'BLOCK REGRESSION USING ALL VARXSCR AND AFQTPCNT';

*STEPWISE REGRESSIONS USING SUCCESS1 AS CRITERION;

PROC STEPWISE;
MODEL SUCCESS1 = AFQTPCNT ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI
SASVABGS SASVABMC SASVABMK SASVABNO SASVABSI
SASVABSP SASVABWK DEPENDTS MALE BLACK OTHER;
TITLE 'REGRESSION USING ALL VARIABLES EXCEPT SCREEN';
PROC STEPWISE;
MODEL SUCCESS1 = AFQTPCNT DEPENDTS ENTRPAYG ENTRYAGE
HSDG SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI
SASVABGS SASVABMC SASVABMK SASVABNO SASVABSI
SASVABSP SASVABWK;
BY GROUP;
TITLE 'REGRESSION USING ALL VARIABLES EXCEPT SCREEN
BY GROUP';

* STEPWISE USING ALL VARIABLES EXCEPT SCREEN AND AFQT';

PROC STEPWISE;
MODEL SUCCESS1 = ENTRPAYG ENTRYAGE HSDG BLACK OTHER
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI
SASVABGS SASVABMC SASVABMK SASVABNO SASVABSI
SASVABSP SASVABWK DEPENDTS MALE;
TITLE 'REGRESSION USING ALL VARIABLES EXCEPT SCREEN
AND AFQTPCNT';
PROC STEPWISE;
MODEL SUCCESS1 = DEPENDTS ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI
SASVABGS SASVABMC SASVABMK SASVABNO SASVABSI
SASVABSP SASVABWK;
BY GROUP;
TITLE 'REGRESSION USING ALL VARIABLES EXCEPT SCREEN
AND AFQT BY GROUP';
/*
//
```

TABLE XXXII

CROSS-VALIDATION USING ALL PREDICTORS

```
//STEP7V1 JOB (3115,0103),'GAGNER',CLASS=C
//*MAIN ORG=NPGVM1.3115P
//   EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.GOLD
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
DATA DERIV8;
  SET FILEIN.DERIV8;
*TO RECODE SEX AS A DUMMY VARIABLE BY CREATING
VARIBALES MALE AND FEMALE;
IF SEX = 1 THEN MALE = 1; ELSE MALE = 0;
*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
IF ((GROUP=1) OR (GROUP=2) OR (GROUP=3) OR (GROUP=4));
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);
*FREQUENCY ON SUCCESS;
DATA WHMALED; SET DERIV8; IF GROUP=1;
DATA WHFMLED; SET DERIV8; IF GROUP=2;
DATA BLMALED; SET DERIV8; IF GROUP=3;
DATA BLFMLED; SET DERIV8; IF GROUP=4;
DATA VALID8;
  SET FILEIN.VALID8;
*TO RECODE SEX AS A DUMMY VARIABLE BY CREATING
VARIABLES MALE AND FEMALE;
IF SEX = 1 THEN MALE = 1; ELSE MALE = 0;

*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
IF ((GROUP=1) OR (GROUP=2) OR (GROUP=3) OR (GROUP=4));
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);
*FREQUENCY ON SUCCESS;
DATA WHMALEV; SET VALID8; IF GROUP=1;
DATA WHFMLEV; SET VALID8; IF GROUP=2;
DATA BLMALEV; SET VALID8; IF GROUP=3;
DATA BLFMLEV; SET VALID8; IF GROUP=4;
PROC FREQ DATA=DERIV8;
TABLES SUCCESS;
TITLE DERIVATION SAMPLE;
PROC FREQ DATA=VALID8;
TABLES SUCCESS;
TITLE VALIDATION SAMPLE;
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);
*FREQUENCY ON SUCCESS;
PROC FREQ DATA=DERIV8;
TABLES SUCCESS;
TITLE DERIVATION SAMPLE;
PROC FREQ DATA=VALID8;
TABLES SUCCESS;
TITLE VALIDATION SAMPLE;

* FOLLOWING ARE SOME REGRESSIONS USING DIFFERENT
  COMBINATIONS;
*BLOCK REGRESSIONS USING SUCCESS AS CRITERIA;
```

```
*REG USING ALL VARIABLES EXCEPT SCREEN;

PROC REG SIMPLE DATA=DERIV8 OUTEST=B01;SUCCHAT1:
MODEL SUCCESS = AFQTPCNT  ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK
DEPENDTS MALE BLACK OTHER;
TITLE 'BLOCK REGRESSION USING ALL VARXSCR--DERIVATION
SAMPLE';
PROC SCORE OUT=B01PRED TYPE=OLS SCORE=B01 DATA=VALID8
PREDICT; VAR AFQTPCNT  ENTRPAYG ENTRYAGE HSDG BLACK OTHER
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK
DEPENDTS MALE;

PROC CORR DATA=B01PRED;VAR SUCCESS SUCCHAT1;
TITLE CROSS-VALIDATION CORRELATION FOR THE VARIABLE
SUCCESS;
PROC REG SIMPLE DATA=DERIV8 OUTEST=B02;SUCCHAT2:
MODEL SUCCESS = AFQTPCNT ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP
SASVABWK DEPENDTS;
BY GROUP;
TITLE 'BLOCK REGRESSION USING ALL VARXSCR
BY GROUP';

DATA GROUPD1;SET B02;IF GROUP=1;
DATA GROUPD2;SET B02;IF GROUP=2;
DATA GROUPD3;SET B02;IF GROUP=3;
DATA GROUPD4;SET B02;IF GROUP=4;

DaTA GROUPV1;SET VALID8;IF GROUP=1;
DATA GROUPV2;SET VALID8;IF GROUP=2;
DATA GROUPV3;SET VALID8;IF GROUP=3;
DATA GROUPV4;SET VALID8;IF GROUP=4;

PROC SCORE OUT=BG12PRED TYPE=OLS SCORE=GROUPD1
DATA=GROUPV1 PREDICT; VAR
AFQTPCNT ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI
SASVABGS SASVABMC SASVABMK SASVABNO SASVABSI
SASVABSP SASVABWK DEPENDTS;

PROC CORR DATA=BG12PRED;VAR SUCCESS SUCCHAT2;
TITLE CROSS-VALIDATION CORRELATION FOR THE
VARIABLE SUCCESS;
TITLE2 WHITE MALE DERIVATION, WHITE MALE VALIDATION;

PROC SCORE OUT=BG22PRED TYPE=OLS SCORE=GROUPD2
DATA=GROUPV2 PREDICT; VAR
AFQTPCNT ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI
SASVABGS SASVABMC SASVABMK SASVABNO SASVABSI
SASVABSP SASVABWK DEPENDTS;

PROC CORR DATA=BG22PRED;VAR SUCCESS SUCCHAT2;
TITLE CROSS-VALIDATION CORRELATION FOR THE
VARIABLE SUCCESS;
TITLE2 WHITE FMLE DERIVATION, WHITE FMLE VALIDATION;


PROC SCORE OUT=BG32PRED TYPE=OLS SCORE=GROUPD3
DATA=GROUPV3 PREDICT; VAR
AFQTPCNT ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI
SASVABGS SASVABMC SASVABMK SASVABNO SASVABSI
SASVABSP SASVABWK DEPENDTS;
```

```
PROC CORR DATA=BG32PRED;VAR SUCCESS SUCCHAT2;
TITLE CROSS-VALIDATION CORRELATION FOR THE
VARIABLE SUCCESS;
TITLE2 BLACK MALE DERIVATION, BLACK MALE VALIDATION;

PROC SCORE OUT=BG42PRED TYPE=OLS SCORE=GROUPD4
DATA=GROUPV4 PREDICT; VAR
AFQTPCNT ENTRPAYG ENTRYAGE HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI
SAVABGSS SASVABMC SASVABMK SASVABNO SASVABSI
SASVABSP SASVABWK DEPENDTS;

PROC CORR DATA=BG42PRED;VAR SUCCESS SUCCHAT2;
TITLE CROSS-VALIDATION CORRELATION FOR THE
VARIABLE SUCCESS;
TITLE2 BLACK FEMALE DERIVATION, BLACK FEMALE
VALIDATION;
/*
//
```

TABLE XXXIII

STEPWISE DISCRIMINATION PROGRAM

```
//STEP8 JOB (3115,0103),'GAGNER',CLASS=C
//*MAIN ORG=NPGVM1.3115P
//  EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.GOLD
//SYSIN DD *
DATA DERIV8;
  SET FILEIN.DERIV8;

*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;

*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
IF ((GROUP=1) OR (GROUP=2) OR (GROUP=3)
OR (GROUP=4)):
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMALED; SET DERIV8; IF GROUP=1;
DATA WHFMLED; SET DERIV8; IF GROUP=2;
DATA BLMALED; SET DERIV8; IF GROUP=3;
DATA BLFMLED; SET DERIV8; IF GROUP=4;

DATA VALID8;
  SET FILEIN.VALID8;

*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;

*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
IF ((GROUP=1) OR (GROUP=2) OR (GROUP=3)
OR (GROUP=4));
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMALEV; SET VALID8; IF GROUP=1;
DATA WHFMLEV; SET VALID8; IF GROUP=2;
DATA BLMALEV; SET VALID8; IF GROUP=3;
DATA BLFMLEV; SET VALID8; IF GROUP=4;
* FREQ ON SUCCESS AND GROUP;

PROC FREQ DATA=DERIV8;
TABLES SUCCESS GROUP;
TITLE DERIVATION SAMPLE;
PROC FREQ DATA=VALID8;
TABLES SUCCESS GROUP;
TITLE VALIDATION SAMPLE;


DATA DERIV8; SET DERIV8;
DATA VALID8; SET VALID8;

PROC STEPDISC STEPWISE SIMPLE;
CLASS SUCCESS;
VAR AFQTPCNT  ENTRPAYG ENTRYAGE HSDG BLACK OTHER
```

```
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK
DEPENDTS MALE;
TITLE STEPWISE DISCRIMINANT ANALYSIS ON ALL VARIABLES;
TITLE2 OVER ALL CASES IN DERIV8;


DATA WHMALED; SET DERIV8; IF GROUP=1;
DATA WHMALEV; SET VALID8; IF GROUP=1;
PROC STEPDISC STEPWISE SIMPLE;
CLASS SUCCESS;
VAR AFQTPCNT  ENTRPAYG ENTRYAGE DEPENDTS HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK;
BY GROUP;
TITLE STEPWISE DISCRIMINANT ANALYSIS ON ALL VARIABLES;
TITLE1 WITHIN EACH GROUP;


DATA WHFMLED; SET DERIV8; IF GROUP=2;
DATA WHFMLEV; SET VALID8; IF GROUP=2;
PROC STEPDISC STEPWISE SIMPLE;
CLASS SUCCESS;
VAR AFQTPCNT  ENTRPAYG ENTRYAGE DEPENDTS HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK;
BY GROUP;
TITLE STEPWISE DISCRIMINANT ANALYSIS ON ALL VARIABLES;
TITLE2 WITHIN EACH GROUP;


DATA BLMALED; SET DERIV8; IF GROUP=3;
DATA BLMALEV; SET VALID8; IF GROUP=3;
PROC STEPDISC STEPWISE SIMPLE;
CLASS SUCCESS;
VAR AFQTPCNT  ENTRPAYG ENTRYAGE DEPENDTS   HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK;
BY GROUP;
TITLE STEPWISE DISCRIMINANT ANALYSIS ON ALL VARIABLES;
TITLE3 WITHIN EACH GROUP;


DATA BLFMLED; SET DERIV8; IF GROUP=4;
DATA BLFMLEV; SET VALID8; IF GROUP=4;
PROC STEPDISC STEPWISE SIMPLE;
CLASS SUCCESS;
VAR AFQTPCNT  ENTRPAYG ENTRYAGE DEPENDTS  HSDG
SASVABAD SASVABAI SASVABAR SASVABEI SASVABGI SASVABGS
SASVABMC SASVABMK SASVABNO SASVABSI SASVABSP SASVABWK;
BY GROUP;
TITLE STEPWISE DISCRIMINANT ANALYSIS ON ALL VARIABLES;
TITLE4 WITHIN EACH GROUP;

*THIS PGM HAS USED ALL VARIABLES USED IN EARLIER REGS;
/*
//
```

TABLE XXXIV

CROSS-VALIDATION USING VARIABLES DERIVED FROM STEP 7

```
//STEP9 JOB (3115,0103),'GAGNER',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//  EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.GOLD
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
DATA DERIV8;
  SET FILEIN.DERIV8;

*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;

*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
IF ((GROUP=1) OR (GROUP=2) OR (GROUP=3) OR (GROUP=4));
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);
*FREQUENCY ON SUCCESS;
DATA WHMALED; SET DERIV8; IF GROUP=1;

DATA VALID8;
  SET FILEIN.VALID8;
*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;
*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
IF ((GROUP=1) OR (GROUP=2) OR (GROUP=3) OR (GROUP=4));
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);
*FREQUENCY ON SUCCESS;
DATA WHMALEV; SET VALID8; IF GROUP=1;
PROC FREQ DATA=DERIV8;
TABLES SUCCESS;
TITLE DERIVATION SAMPLE;
PROC FREQ DATA=VALID8;
TABLES SUCCESS;
TITLE VALIDATION SAMPLE;

* FOLLOWING ARE SOME REGRESSIONS USING
DIFFERENT COMBINATIONS;

*BLOCK REGRESSIONS USING SUCCESS AS CRITERIA;

PROC REG SIMPLE DATA=DERIV8 OUTEST=B01;SUCCHAT1:
MODEL SUCCESS = ENTRPAYG HSDG BLACK
SASVABSI
MALE;
TITLE 'BLOCK REGRESSION SIX VARIABLES FM DERIVATION REG';

PROC SCORE OUT=B01PRED TYPE=OLS SCORE=B01
DATA=VALID8 PREDICT; VAR
ENTRPAYG HSDG BLACK
SASVABSI
MALE;
PROC CORR DATA=B01PRED;VAR SUCCESS SUCCHAT1;
TITLE CROSS-VALIDATION CORRELATION FOR THE
```

```
VARIABLE SUCCESS;

PROC REG SIMPLE DATA=WHMALED OUTEST=B02;SUCCHAT2:
MODEL SUCCESS = ENTRPAYG HSDG
SASVABAI SASVABSI;
TITLE 'BLOCK REGRESSION TRY DERIV8 SASVABS
BY GROUP 1';


DATA GROUPV1;SET VALID8;IF GROUP=1;



PROC SCORE OUT=BG12PRED TYPE=OLS SCORE=B02
DATA=GROUPV1 PREDICT; VAR
ENTRPAYG HSDG
SASVABAI SASVABSI;

PROC CORR DATA=BG12PRED;VAR SUCCESS SUCCHAT2;
TITLE CROSS-VALIDATION CORRELATION FOR THE
VARIABLE SUCCESS;
TITLE2 WHITE MALE DERIVATION, WHITE MALE VALIDATION;


/*
//
```

TABLE XXXV

DISCRIMINANT ANALYSIS PROGRAMS

```
//STEP10A JOB (3115,C103),'PRPROP',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//   EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.GOLD
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
*THIS PROGRAM GETS HITRATE INFO USING VARS
 FROM RESULTS OF STEP 7 CROSS-VALIDATION
 WHICH WERE ALSO USED IN STEP 9, AND IT ALSO
 USES POOL=YES AND PRIORS PROP;

DATA DERIV8;
  SET FILEIN.DERIV8;

*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;

*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMDER;SET FILEIN.DERIV8;IF GROUP=1;
*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA VALID8;
  SET FILEIN.VALID8;
*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;
*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMVAL;SET FILEIN.VALID8;IF GROUP=1;
*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

PROC FREQ DATA=DERIV8;
TABLES SUCCESS GROUP;
TITLE DERIVATION SAMPLE;
PROC FREQ DATA=WHMDER;
TABLES SUCCESS;
TITLE DERIVATION SAMPLE WHITES;

PROC FREQ DATA=VALID8;
TABLES SUCCESS GROUP;
```

```
TITLE VALIDATION SAMPLE;
PROC FREQ DATA=WHMVAL;
TABLES SUCCESS;


PROC DISCRIM DATA=DERIV8 OUT=PARMS SIMPLE POOL=YES;
CLASS SUCCESS;
 VAR   ENTRPAYG HSDG BLACK SASVABSI MALE ;
PRIORS PROPORTIONAL;
TITLE DERIVATION RESULTS OVERALL;
PROC DISCRIM DATA=PARMS TESTDATA=VALID8;
TESTCLASS SUCCESS;
TITLE VALIDATION RESULTS OVERALL;

PROC DISCRIM DATA=WHMDER OUT=PARMS SIMPLE POOL=YES;
CLASS SUCCESS;
 VAR   ENTRPAYG HSDG SASVABAI SASVABSI;
PRIORS PROPORTIONAL;
TITLE DERIVATION RESULTS WHITES;
PROC DISCRIM DATA=PARMS TESTDATA=WHMVAL;
TESTCLASS SUCCESS;
TITLE VALIDATION RESULTS WHITES;
/*
//



//STEP10E JOB (3115,0103),'PRPROP',CLASS=B
//*MAIN ORG=NPGVM1.31145
//   EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.GOLD
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
*THIS PROGRAM GETS HIT RATE INFO USING VARS
 FROM RESULTS OF STEP 7 CROSS-VALIDATION
 WHICH WERE ALSO USED IN STEP 9, AND IT ALSO
USES POOL=TEST AND PRIORS PROP;

DATA DERIV8;
  SET FILEIN.DERIV8;
*TO DEFINE THE VARIABLE SUCCESS;
*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMDER;SET FILEIN.DERIV8;IF GROUP=1;
*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA VALID8;
  SET FILEIN.VALID8;
*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;
*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);
```

```
DATA WHMVAL;SET FILEIN.VALID8;IF GROUP=1;
*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);


PROC FREQ DATA=DERIV8;
TABLES SUCCESS GROUP;
TITLE DERIVATION SAMPLE;
PROC FREQ DATA=WHMDER;
TABLES SUCCESS;
TITLE DERIVATION SAMPLE WHITES;


PROC FREQ DATA=VALID8;
TABLES SUCCESS GROUP;
TITLE VALIDATION SAMPLE;
PROC FREQ DATA=WHMVAL;
TABLES SUCCESS;
TITLE VALIDATION SAMPLE WHITES;


PROC DISCRIM DATA=DERIV8 OUT=PARMS SIMPLE POOL=TEST;
CLASS SUCCESS;
 VAR  ENTRPAYG HSDG BLACK SASVABSI MALE ;
PRIORS PROPORTIONAL;
TITLE DERIVATION RESULTS OVERALL;
PROC DISCRIM DATA=PARMS TESTDATA=VALID8;
TESTCLASS SUCCESS;
TITLE VALIDATION RESULTS OVERALL;

PROC DISCRIM DATA=WHMDER OUT=PARMS SIMPLE POOL=TEST;
CLASS SUCCESS;
 VAR  ENTRPAYG HSDG SASVABAI SASVABSI ;
PRIORS PROPORTIONAL;
TITLE DERIVATION RESULTS WHITES;
PROC DISCRIM DATA=PARMS TESTDATA=WHMVAL;
TESTCLASS SUCCESS;
TITLE VALIDATION RESULTS WHITES;
/*
//



//STEP10C JOB (3115,0103),'NOPROP',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//  EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.GOLD
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
*THIS PROGRAM GETS HIT RATE INFO USING VARS
FROM RESULTS OF STEP 7 CROSS-VALIDATION
WHICH WERE ALSO USED IN STEP 9, AND USES POOL=YES
BUT NOT PRIORS PROP;

DATA DERIV8;
  SET FILEIN.DERIV8;
IF SEX=1 THEN MALE=1; ELSE MALE=0;
*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
```

```
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMDER;SET FILEIN.DERIV8;IF GROUP=1;
*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);



*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);


DATA VALID8;
  SET FILEIN.VALID8;
IF SEX=1 THEN MALE=1; ELSE MALE=0;
*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMVAL;SET FILEIN.VALID8;IF GROUP=1;
*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);


PROC FREQ DATA=DERIV8;
TABLES SUCCESS GROUP;
TITLE DERIVATION SAMPLE;
PROC FREQ DATA=WHMDER;
TABLES SUCCESS;
TITLE DERIVATION SAMPLE WHITE MALES;


PROC FREQ DATA=VALID8;
TABLES SUCCESS GROUP;
TITLE VALIDATION SAMPLE;
PROC FREQ DATA=WHMVAL;
TABLES SUCCESS;
TITLE VALIDATION SAMPLE WHITE MALES;


PROC DISCRIM DATA=DERIV8 OUT=PARMS SIMPLE POOL=YES;
CLASS SUCCESS;
 VAR  ENTRPAYG HSDG BLACK  SASVABSI MALE;
TITLE DERIVATION RESULTS OVERALL;
PROC DISCRIM DATA=PARMS TESTDATA=VALID8;
TESTCLASS SUCCESS;
TITLE VALIDATION RESULTS OVERALL;

PROC DISCRIM DATA=WHMDER OUT=PARMS SIMPLE POOL=YES;
CLASS SUCCESS;
 VAR  ENTRPAYG HSDG SASVABAI SASVABSI;
```

```
TITLE DERIVATION RESULTS WHITE MALES;
PROC DISCRIM DATA=PARMS TESTDATA=WHMVAL;
TESTCLASS SUCCESS;
TITLE VALIDATION RESULTS WHITE MALES;
/*
//



//STEP10D JOB (3115,0103),'NCPROP',CLASS=B
//*MAIN ORG=NPGVM1.3115P
//  EXEC SAS
//SAS.WORK DD SPACE=(CYL,(10,10))
//FILEIN DD DISP=(OLD,KEEP),DSN=MSS.S3115.GOLD
//SYSIN DD *
OPTIONS NOCENTER LS=80 ERRORS=0;
*THIS PROGRAM GETS HIT RATE INFO USING VARS
FROM RESULTS OF STEP 7 CROSS-VALIDATION
WHICH WERE ALSO USED IN STEP 9, AND USES POOL=TEST
BUT NOT PRIORS PROP;

DATA DERIV8;
  SET FILEIN.DERIV8;
*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;
*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMDER;SET FILEIN.DERIV8;IF GROUP=1;
*TO DEFINE THE VARIABLE SUCCESS;

IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA VALID8;
  SET FILEIN.VALID8;
*TO RECODE SEX;
IF SEX=1 THEN MALE=1; ELSE MALE=0;
*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

DATA WHMVAL;SET FILEIN.VALID8;IF GROUP=1;
*TO DEFINE THE VARIABLE SUCCESS;
IF ((TAFMS1 GE 45) AND (ACHVDE4=1) AND (ELIGREUP=1))
THEN SUCCESS = 1;
ELSE SUCCESS = 0;
LABEL
SUCCESS = MEETS ALL CRITERIA (1), OTHER (0);

PROC FREQ DATA=DERIV8;
TABLES SUCCESS GROUP;
TITLE DERIVATION SAMPLE;
PROC FREQ DATA=WHMDER;
TABLES SUCCESS;
TITLE DERIVATION SAMPLE WHITES;
```

```
PROC FREQ DATA=VALID8;
TABLES SUCCESS GROUP;
TITLE VALIDATION SAMPLE;
PROC FREQ DATA=WHMVAL;
TABLES SUCCESS;
TITLE VALIDATION SAMPLE WHITES;


PROC DISCRIM DATA=DERIV8 OUT=PARMS SIMPLE POOL=TEST;
CLASS SUCCESS;
 VAR  ENTRPAYG HSDG BLACK SASVABSI MALE;
TITLE DERIVATION RESULTS OVERALL;
PROC DISCRIM DATA=PARMS TESTDATA=VALID8;
TESTCLASS SUCCESS;
TITLE VALIDATION RESULTS OVERALL;

PROC DISCRIM DATA=WHMDER OUT=PARMS SIMPLE POOL=TEST;
CLASS SUCCESS;
 VAR  ENTRPAYG HSDG SASVABAI SASVABSI;
TITLE DERIVATION RESULTS WHITES;
PROC DISCRIM DATA=PARMS TESTDATA=WHMVAL;
TESTCLASS SUCCESS;
TITLE VALIDATION RESULTS WHITES;
/*
//
```

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